Unit One

Natural numbers

Lesson 1 : The set of natural numbers.

Lesson 2 : Ordering and comparing natural numbers.

Lesson 3 : Operations on natural numbers
(Addition operation - Subtraction operation).

Lesson 4 : Follow operations on natural numbers.
(Multiplication operation - Division operation).

Lesson 5 : Numerical patterns.

RaNia SaYed

A general exercise from the school book is given at the end of the unit



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Unit One

Lesson 1 The set of natural numbers

Counting numbers



Ashraf wanted to know how many books he has got , so he started to count his books.

He held a book and said "one" , then he held another book and said "two" , then another one and said "three" and so on till he reached the last book.

- The process Ashraf did is called "counting operation".
- The numbers that Ashraf used are called "counting numbers" and it is denoted by C

i.e. The numbers 1 , 2 , 3 , 4 , ··· etc. are used to count different things and hence :

$$C = \{1 , 2 , 3 , 4 , 5 , 6 , 7 , \cdots\}$$

Note that :

- The counting numbers begin with the number 1 and continues without ending.

 i.e. The set of counting numbers is an infinite set.

The set of natural numbers

After the invention of zero "to express nothing of units" and adding it to the set of counting numbers , we get a new set of numbers called «the set of natural numbers» and it is denoted by $\mathbb{N}$

0

$$\textit{i.e. } \mathbb{N} = \{0 , 1 , 2 , 3 , 4 , 5 , 6 , 7 , \cdots\}$$

Note that :

- $\mathbb{N}$ = the set of counting numbers $\cup \{0\}$
- $\mathbb{N} - \{0\}$ = the set of counting numbers.
- The set of counting numbers is a subset of the set of natural numbers $\mathbb{N}$
- The set of natural numbers is an infinite set.

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Lesson One

Example 1

Put (✓) under the number if it is a natural number :

19	3.7	$\frac{8}{2}$	0	$\frac{2}{5}$	5934001	0.6

Solution

19	3.7	$\frac{8}{2}$	0	$\frac{2}{5}$	5934001	0.6
✓		✓	✓		✓	

Example 2

Mark (✓) for the correct statement and (×) for the incorrect ones :

[a] $0 \in \mathbb{N}$ ()

[b] $\{0\} \subset \mathbb{N}$ ()

[c] $\frac{1}{2} \in \mathbb{N}$ ()

[d] $\varnothing \subset \mathbb{N}$ ()

[e] $1.3 \notin \mathbb{N}$ ()

[f] $\{2, 3, 7\} \not\subset \mathbb{N}$ ()

[g] $942178 \in \mathbb{N}$ ()

[h] $\{0, 1, 2, 3, \cdots\} \subset \mathbb{N}$ ()

Solution

[a] ✓ [b] ✓ [c] × [d] ✓

[e] ✓ [f] × [g] ✓ [h] ✓

Try by yourself

Complete using $\in, \notin, \subset$ or $\not\subset$:

[a] $\left\{\frac{1}{2}\right\}$ $\mathbb{N}$

[b] 1000 000 $\mathbb{N}$

[c] $\varnothing$ $\mathbb{N}$

[d] {5 , 0.5 , 55} $\mathbb{N}$

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Unit One

Some subsets of $\mathbb{N}$

- The set of even numbers $(E) = \{0 , 2 , 4 , 6 , 8 , ...\}$
- The set of odd numbers $(O) = \{1 , 3 , 5 , 7 , 9 , ...\}$
- The set of prime numbers $(P) = \{2 , 3 , 5 , 7 , 11 , 13 , 17 , 19 , ...\}$

– The opposite Venn diagram represent the sets : $\mathbb{N}$, E and O



$E \subset \mathbb{N} , O \subset \mathbb{N}$

– From the previous Venn diagram we can notice that :

[1] $E \cap O = \varnothing$ **[2]** $E \cup O = \mathbb{N}$ **[3]** $\mathbb{N} \cap E = E$

[4] $\mathbb{N} \cap O = O$ **[5]** $\mathbb{N} \cup E = \mathbb{N}$ **[6]** $\mathbb{N} \cup O = \mathbb{N}$

Example 3

Complete each of the following :

[a] $E - O =$ **[b]** $O - E =$

[c] $O - \mathbb{N} =$ **[d]** $\mathbb{N} - E =$

[e] $\mathbb{N} \cap P =$ **[f]** $P \cap E =$

[g] $\{10 , 9 , 8 , 7\} \cap O =$

Solution

[a] E **[b]** O **[c]** $\varnothing$ **[d]** O

[e] P **[f]** $\{2\}$ **[g]** $\{7 , 9\}$

Try by yourself

Complete each of the following :

[a] $P - \mathbb{N} =$ **[b]** $\mathbb{N} - O =$

[c] $\mathbb{N} \cap \{0 , 2 , 4 , 5\} =$ **[d]** $\{2 , 3 , 4 , 5\} \cap E =$

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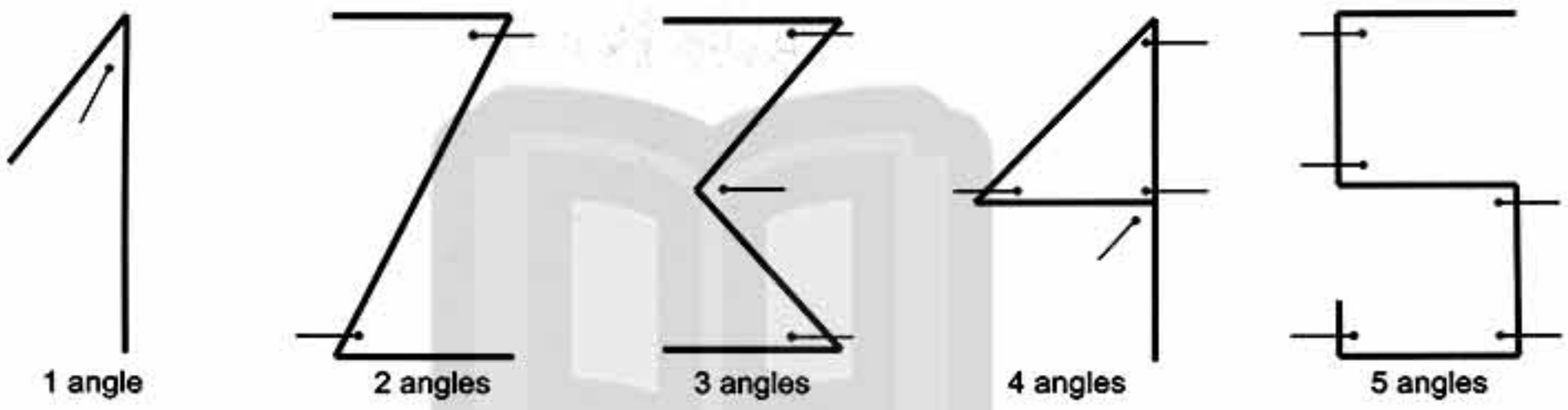


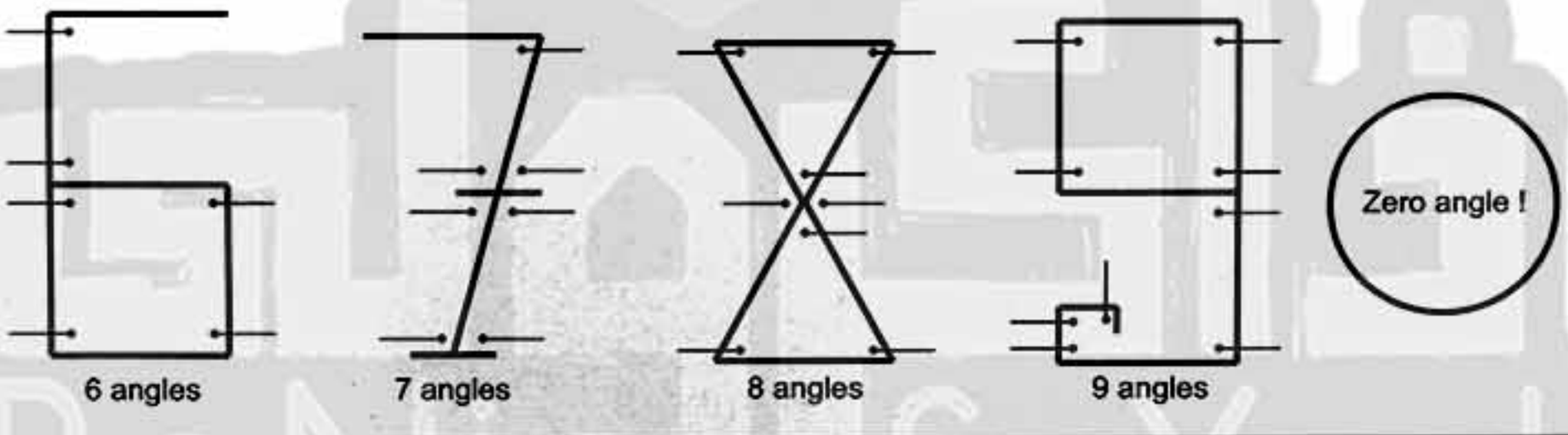
Lesson One

Enrich your knowledge

The number system that we use today {1 , 2 , 3 , 4 , 5 , ···} is known as ARABIC NUMBERS SYSTEM.

Have you ever thought why One is written as 1 , Two as 2 , Three as 3 , ··· and so on ? It is all because of angles. Yes , it is the number of angles in each digit.





Rania Sayed

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Unit One

From the school book

Exercise 1 The set of natural numbers

1 Underline the natural numbers from the following numbers :

15 , 6.2 , 0 , 417 , $\frac{4}{5}$, 0.7 and 91328

2 Complete by using the suitable symbol from $\in$, $\notin$, $\subset$ or $\not\subset$:

(a) 2 $\mathbb{N}$

(b) {2} $\mathbb{N}$

(c) {0} $\mathbb{N}$

(d) 0 $\mathbb{N}$

(e) 22.22 $\mathbb{N}$

(f) {55} $\mathbb{N}$

(g) {2 , 4 , 6} $\mathbb{N}$

(h) {2 , 0.2} $\mathbb{N}$

(i) $\varnothing$ $\mathbb{N}$

(j) $\frac{15}{3}$ $\mathbb{N}$

(k) $\frac{3}{4}$ $\mathbb{N}$

(l) {3 , 4 , 5 , ... , 30} $\mathbb{N}$

(m) {3 , 7} $\cap$ {3 , 5} $\mathbb{N}$

(n) {1 , 3} $\cap$ {2 , 4} $\mathbb{N}$

(o) {0} $\cup$ {1 , 2 , 3 , ...} $\mathbb{N}$

(p) {0} the set of counting numbers.

(q) {1 , 2 , 3} $\cup$ {2 , 5 , 7} the set of counting numbers.

(r) The number of people in the world $\mathbb{N}$

3 Mark (✓) for the true statements and (×) for the false ones :

(a) 7.2 $\in \mathbb{N}$ ()

(b) $\frac{2}{3} \in \mathbb{N}$ ()

(c) {0} $\subset \mathbb{N}$ ()

(d) {19} $\subset \mathbb{N}$ ()

(e) $\varnothing \not\subset \mathbb{N}$ ()

(f) 475 621 $\in \mathbb{N}$ ()

(g) {1 , 4 , 5} $\subset \mathbb{N}$ ()

(h) {0 , 1 , 2 , 3 , ... , 100} $\subset \mathbb{N}$ ()

(i) {0} is a subset of the counting numbers. ()

(j) {0} $\cup$ {1 , 2 , 3} = $\mathbb{N}$ ()

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(k) $\{5, 8\} \cap \{4, 9\} \subset \mathbb{N}$ ()

(l) $\{0, 1, 2\} \cup \{3, 4, 5, \cdots\} = \mathbb{N}$ ()

(m) 🕮 Weight of any thing in kgs. $\in \mathbb{N}$ ()

(n) 🕮 Number of pages of a book $\in \mathbb{N}$ ()

(o) 🕮 The set of natural numbers is infinite. ()

4 Complete each of the following to get a true sentence :

(a) 🕮 $E \cup O$ = ...

(b) 🕮 $E \cap O$ = ...

(c) 🕮 $E - O$ = ...

(d) $O - E$ = ...

(e) $\mathbb{N} \cap O$ = ...

(f) $\mathbb{N} \cap E$ = ...

(g) 🕮 $\mathbb{N} \cap P$ = ...

(h) 🕮 $E \cap P$ = ...

(i) $\mathbb{N} \cup E$ = ...

(j) 🕮 $\mathbb{N} \cup O$ = ...

(k) $P \cup \mathbb{N}$ = ...

(l) $E - \mathbb{N}$ = ...

(m) $\mathbb{N} - O$ = ...

(n) $P - O$ = ...

(o) 🕮 $\mathbb{N} \cap C$ = ...

(p) $C \cup \mathbb{N}$ = ...

(q) 🕮 $\{15, 6, 0, 4\} \cap \mathbb{N}$ = ...

(r) $O \cap \{0, 1, 2\}$ = ...

(s) $E \cap \{0, 1, 2\}$ = ...



Challenge

5 Complete using [$\in$ or $\notin$] :

(a) $(15.7 + 9.3)$ $\mathbb{N}$

(b) $(2.4 + \frac{3}{5})$ $\mathbb{N}$

(c) (15.2×8.5) $\mathbb{N}$

(d) $(214.25 - 15\frac{1}{4})$ $\mathbb{N}$

(e) $(21 \div \frac{7}{11})$ $\mathbb{N}$

(f) (12×4.1) $\mathbb{N}$

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Unit One

Lesson 2 Ordering and comparing natural numbers

Representing natural numbers on the number line

Every natural number can be represented by one point on a straight line such that the distance between any two consecutive points is equal.

This straight line is called "the number line".



the number line

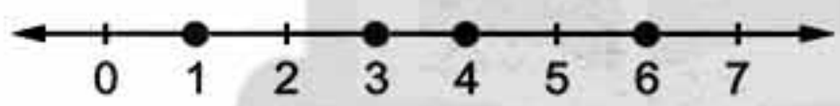
Example 1

Represent each of the following two sets on the number line :

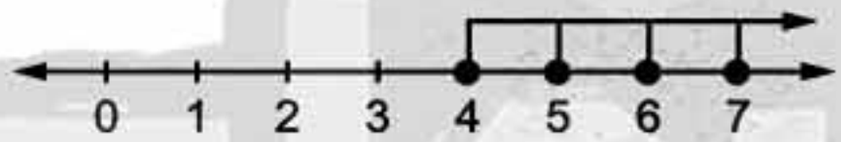
[a] $X = \{1 , 3 , 4 , 6\}$ **[b]** $Y = \{4 , 5 , 6 , 7 , \cdots\}$

Solution

[a]



[b]



The arrow towards the right direction up to the points $4 , 5 , 6 , 7 , \cdots$ expresses that the set Y is an infinite set.

Example 2

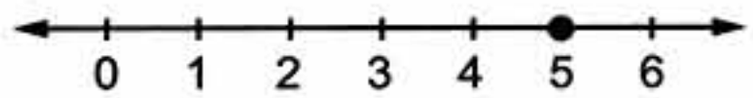
If $X = \{1 , 2 , 3 , 5\}$ ***and*** $Y = \{5 , 6 , 7\}$ ***, represent the following sets on the number line.***

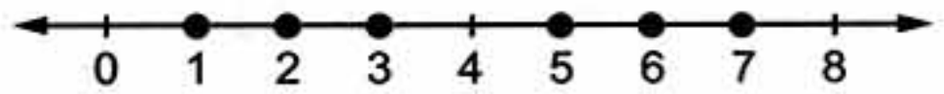
[a] $X \cap Y$ **[b]** $X \cup Y$

Solution

[a] $X \cap Y = \{5\}$

[b] $X \cup Y = \{1 , 2 , 3 , 5 , 6 , 7\}$





Try by yourself

Represent each of the following sets on the number line :

[a] $\{0 , 2 , 3 , 5\}$

.....

[b] The set of odd numbers :

.....

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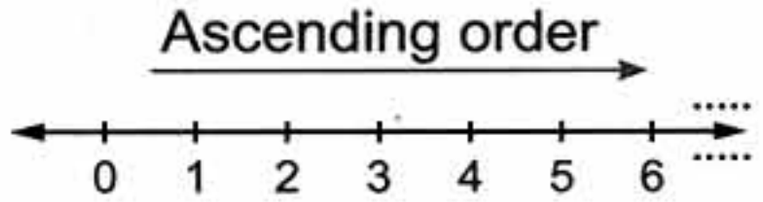
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Lesson two

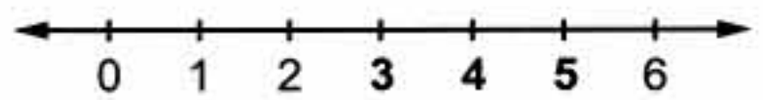
Ordering and comparing natural numbers

The natural numbers , represented on the number line , are arranged from the smallest to the greatest from left to right.
(i.e. that is in an ascending order)
i.e. 0 < 1 < 2 < 3 < 4 < ...



For example :

• We say that **4** is less than **5** and we write **4 < 5**



Note that :

The point representing the number **4** lies on the left to the point representing the number **5**

• We say that **4** is greater than **3** and we write **4 > 3**

Note that :

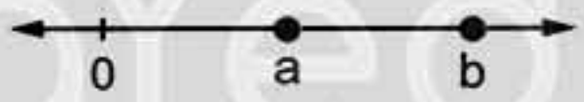
The point representing the number **4** lies on the right to the point representing the number **3**

From previous , we can say that : 4 is greater than **3** and less than **5**
or we say that 4 is between **3** and **5**

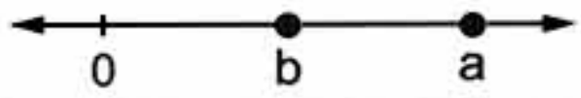
In general

For any two natural numbers represented on the number line a and b :

• If the point that represents the number **b** is placed to the right of the point that represents the number **a** , then $b > a$



• If the point that represents the number **b** is placed to the left of the point that represents the number **a** , then $b < a$



Note that :

• Zero is the smallest natural number.
• One is the smallest counting number.
• The graph of the number 0 is the origin.
• $a < b$ means "a is less than b"
• $a \leq b$ means "a is less than or equal to b"
• $a > b$ means "a is greater than b"
• $a \geq b$ means "a is greater than or equal to b"

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Unit One

Example 3

Express each of the following sets by the listing method and represent it on the number line :

[a] X = the natural numbers which are less than 5

[b] Y = the counting numbers which are less than 6

[c] Z = the natural numbers which are greater than 4

[d] A = the natural numbers which are less than or equal to 4

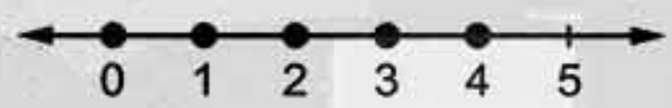
[e] B = the natural numbers which are greater than 1 and less than 5

[f] C = the prime numbers which are less than 10

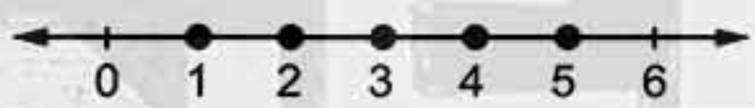
[g] D = the odd numbers between 3 and 11

Solution

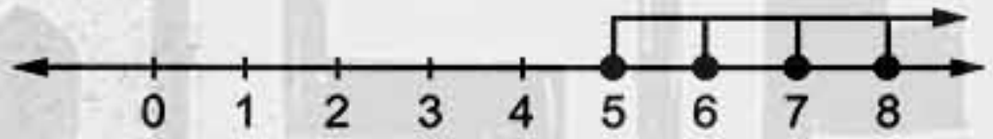
[a] X = {4 , 3 , 2 , 1 , 0}



[b] Y = {5 , 4 , 3 , 2 , 1}



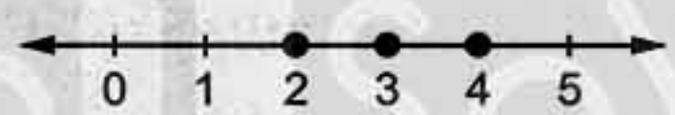
[c] Z = {5 , 6 , 7 , 8 , ...}



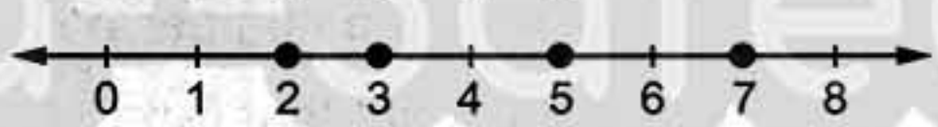
[d] A = {4 , 3 , 2 , 1 , 0}



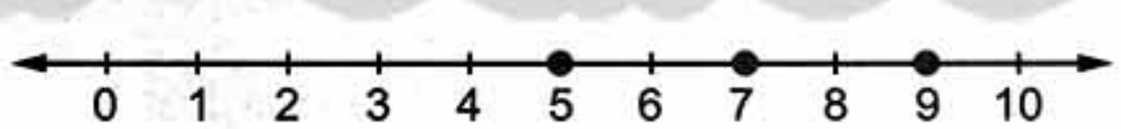
[e] B = {2 , 3 , 4}



[f] C = {2 , 3 , 5 , 7}



[g] D = {5 , 7 , 9}



Example 4

Write the following sets using the listing method and represent them on the number line :

[a] X = {a : a ∈ ℕ , a is between 2 , 6}

[b] Y = {a : a ∈ ℕ , a ≤ 4}

[c] Z = {a : a ∈ ℕ , 3 ≤ a < 7}

[d] M = {a : a ∈ E , 2 < a ≤ 8}

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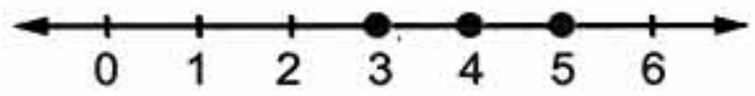


Lesson two

Solution

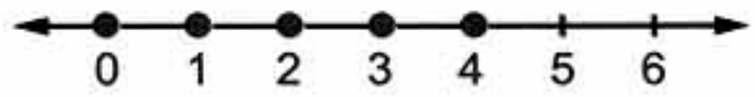
[a] X is the set of natural numbers which are between 2 and 6

, then X = {3 , 4 , 5}

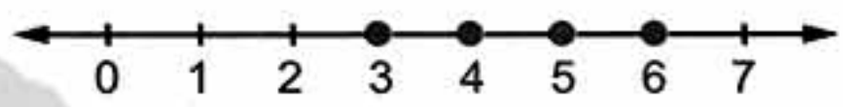


[b] Y is the set of natural numbers which are less than or equal to 4

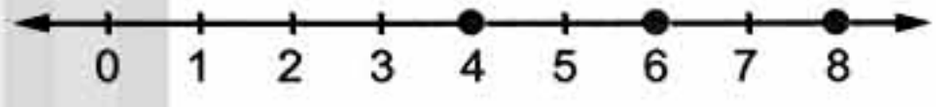
, then Y = {0 , 1 , 2 , 3 , 4}



[c] Z is the set of natural numbers which are greater than or equal 3 and less than 7 , then Z = {3 , 4 , 5 , 6}



[d] M is the set of even numbers which are greater than 2 and less than or equal 8 , then Z = {4 , 6 , 8}



Try by yourself

Write the following sets by the listing method and represent them on the number line :

[a] X = The natural numbers between 4 and 8

.....

.....

[b] Y = The natural numbers less than 3

.....

[c] Z = the odd numbers greater than or equal to 3

.....

[d] M = {a : a ∈ ℕ , 2 ≤ a ≤ 5}

.....

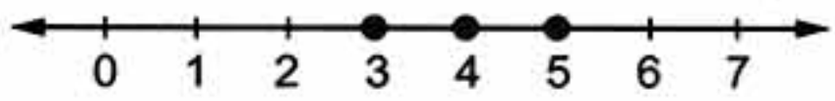
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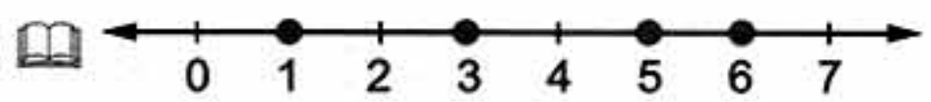
Unit One

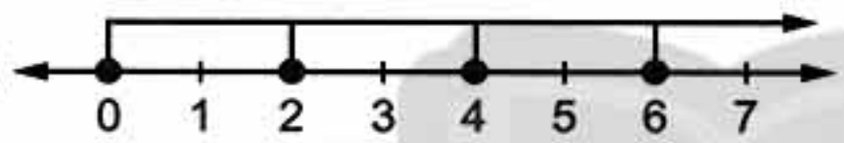
From the school book

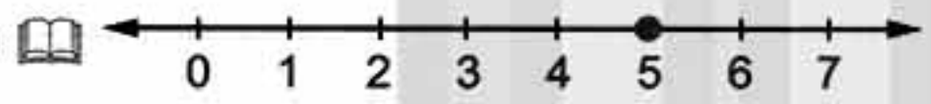
Exercise 2 Ordering and comparing natural numbers

1 Write down the represented set on the following number lines :

(a) 

(b) 

(c) 

(d) 

2 Represent each of the following sets on the number line :

(a) $\{1 , 4\}$

(b) $\{0 , 2 , 3\}$

(c) $\{4\}$

(d) $\{1 , 2 , 3 , 5\}$

(e) $\{3 , 4 , 5 , \cdots\}$

(f) $\{1 , 3 , 5 , 7 , \cdots\}$

(g) $\{7 , 9\} \cup \{8\}$

(h) $\{2 , 4 , 7 , 19\} \cap \{2 , 4 , 5 , 9\}$

(i) $\{4 , 8 , 9 , 10\} - \{8 , 10\}$

3 Represent on the number line $X \cup Y$, where :
$X = \{1 , 2 , 3 , 5\}$, $Y = \{5 , 6 , 7\}$, then find $X \cap Y$

4 Write, using the listing method , each of the following sets of numbers and represent each of them on the number line :

(a) The set of counting numbers less than 4

(b) The set of natural numbers less than 7

(c) The set of natural numbers greater than 3

(d) The set of natural numbers between 1 and 4

(e) The set of natural numbers greater than 3 and less than 7

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Lesson two

(f) The set of natural numbers less than or equal to 5

(g) 🕮 The set of natural numbers greater than or equal to 4

(h) 🕮 The set of odd numbers.

(i) 🕮 The set of even numbers.

(j) The set of even numbers between 2 and 6

(k) The set of odd numbers less than 9

(l) The set of prime numbers less than 10

(m) The set of natural numbers between 3.45 and 7.9

(n) The set of natural numbers greater than $4\frac{1}{3}$ but less than 6.9

(o) The set of natural numbers which are not less than 2 and not greater than 7

(p) 🕮 The set of prime factors of 30

(q) The set of natural numbers divisible by 1

5 If x is an even number included between 2 and 10 , write down the values of x , then represent the values of $\frac{x}{2}$ on the number line.

6 If x is a prime number included between 1 and 5 , write down the values of x , then represent the values of $\frac{12}{x}$ on the number line.

7 Put (✓) or (✗) :

(a) The natural number between 37 and 39 is 38 ()

(b) There is only one natural number between 99 and 101 ()

(c) There is no natural numbers between 499 and 501 ()

(d) There are exactly two natural numbers between 3 and 5 ()

(e) The least natural number that is greater than 7 but less than 24 is 23 ()

(f) There is no natural numbers between 3.4 and 4.4 ()

(g) There is one natural number between 2.8 and 3 ()

(h) 🕮 The greatest natural number is milliard. ()

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Unit One

8 Complete :

(a) 🕮 *The smallest natural number is*

(b) 🕮 The smallest counting number is

(c) The least even number is

(d) The least odd number is

(e) The least prime number is

(f) The least natural number between 4 and 9 is

(g) The greatest natural number between 0 and 10 is

(h) The natural number between 7 and 9 is

(i) The natural number greater than 8 but less than 10 is

(j) The natural number between $\frac{9}{3}$ and $\frac{15}{3}$ is

(k) The greatest 2-digit natural number is

(l) The natural numbers between $5\frac{1}{3}$ and $9\frac{2}{7}$ are

(m) Between 10 and 103 there are natural numbers.

9 🕮 **Rewrite the following statements using [> , ≥ , < or ≤]:**

(a) X is less than 8

(b) X is greater than 8

(c) 8 is less than X

(d) 8 is greater than X

(e) Z is greater than or equal to L

(f) 9 is less than or equal to L

(g) 9 is greater than or equal to L

(h) Z is between 9 and 17

10 Write the following sets using the listing method and represent them on the number line :

(a) 🕮 $X = \{a : a \in \mathbb{N}$, where a is between 0 , 4$\}$

(b) $X = \{a : a \in \mathbb{N}$, where a is less than 3$\}$

(c) 🕮 $Z = \{a : a \in \mathbb{N}, a < 6\}$

(d) $Y = \{a : a \in \mathbb{N}, a \leq 5\}$

(e) 🕮 $Y = \{a : a \in \mathbb{N}, a \geq 3\}$

(f) $Z = \{a : a \in \mathbb{N}, a > 4\}$

(g) 🕮 $M = \{a : a \in \mathbb{N}, 2 \leq a \leq 5\}$

(h) $L = \{a : a \in \mathbb{N}, 3 < a \leq 6\}$

(i) $B = \{b : b \in \mathbb{N}, 7 > b > 4\}$

(j) $D = \{d : d \in O, 3 \leq d < 9\}$

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Lesson two

11 If $U = \{x : x \in \mathbb{N} , 1 \leq x \leq 8\}$, $X = \{2 , 3 , 4 , 5\}$, Y is the set of factors of 6 , then find each of the following and represent it on the number line :

(a) $X \cap Y$ (b) $X \cup Y$ (c) $X - Y$

(d) $\grave{Y}$ (e) $(Y - X)\grave{} \cap \grave{X}$

12 🕮 Find the ascending order of : **5 , 0 , 2 , 4 , 1** and represent then on a number line.

13 Write the descending order of : 456 , 546 , 465 , 654 , 564 , 645

14 🕮 **Write [< , > or =]:**

(a) 908 9008 (b) 5075 5057

(c) 2239 2229 (d) $x + 18$ $x + 17$, where $x \in \mathbb{N}$

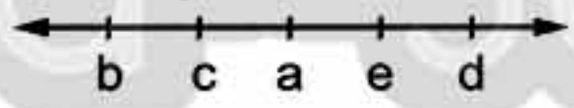
(e) $x - 18$ $x - 17$, where x is a natural number greater than 20.

(f) x 75 , where $x \in \{30 , 21 , 32 , 33\}$

(g) y 18 , where $y \in \{20 , 21 , 22 , 23 , 24\}$

(h) z 35 , where $z \in \{35\}$

15 🕮 **If the following natural numbers a , b , c , d and e are represented on a number line as shown on the figure below :**



First : Complete using [< or >] and justify your answer :

(a) a b because a is placed to the right of b

(b) b c because b is placed to the left of c

(c) c e because

(d) e b because

(e) a d because

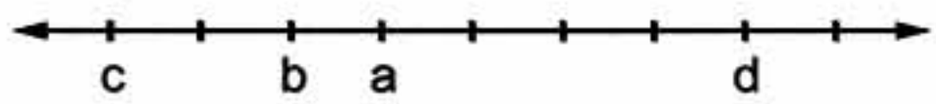
(f) c d because

Second : The ascending order is : , ... , ... , ... , ...

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Unit One

16 The following number line graph shows 4 numbers a , b , c and d :



Complete with [< or >] :

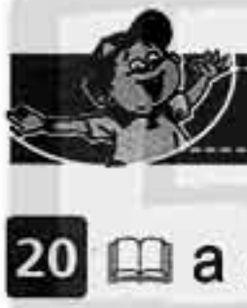
(a) a b (b) c d (c) d a

(d) a c (e) c b (f) d b

17 🕮 The greatest number of four consecutive natural numbers is $x + 7$
Find the other three numbers.

18 🕮 The greatest number of five consecutive natural odd numbers is y + 15
Find the other four numbers.

19 🕮 The middle number of three successive natural odd is y. Find the other two numbers. What is the least value of the number y ?



Challenge

20 🕮 a , b , c and d are four natural numbers where , d > a , b < c , c < d , b < d , and b > a. **Represent these numbers on a number line.**

RaNia Sayed

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Lesson 3 Operations on natural numbers (Addition operation – Subtraction operation)

First Addition operation on ℕ

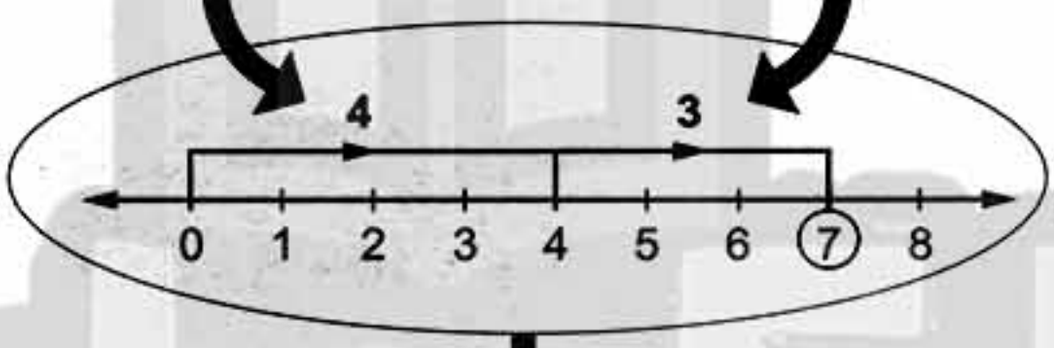
We can use the number line to find the sum of any two natural numbers.

For example :

To find 4 + 3 using the number line , do as the following :

First :
Start at **0** and move **4** units to the **right** , we reach the number **4**

Second :
From **4** move **3** more units to the **right** , we reach the number **7**



Then :
4 + 3 = 7

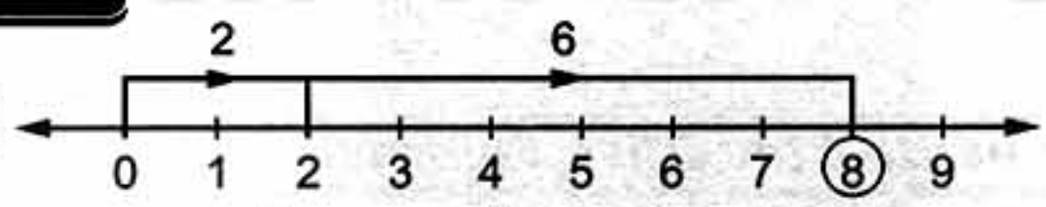
Example 1

Use the number line to find the result of each of the following :

[a] 2 + 6 **[b]** 3 + 2 + 2

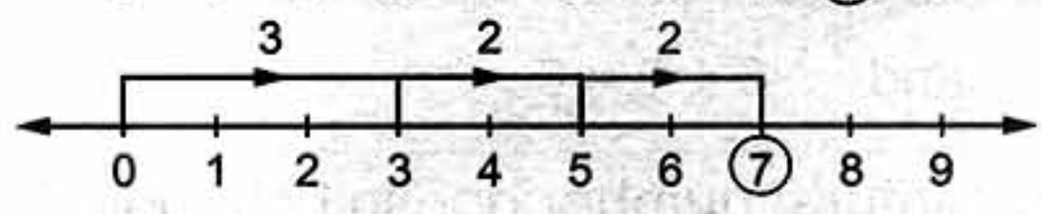
Solution

[a]



2 + 6 = 8

[b]



3 + 2 + 2 = 7

Properties of addition of natural numbers

1 *Closure property*

We know that : 2 is a natural number and 3 is a natural number , then 2 + 3 = 5 , 5 is also a natural number.

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This means : The sum of any two natural numbers is a natural number
i.e. The addition operation is always possible in $\mathbb{N}$
or $\mathbb{N}$ is closed under the addition operation.

2 *Commutative property*

Notice that : $3 + 4 = 7$ and $4 + 3 = 7$

, then : $3 + 4 = 4 + 3$

This means : Interchanging addends doesn't affect the sum.
i.e. The addition operation of natural numbers is commutative.

3 *Associative property*

Notice that : $7 + 3 + 5 = (7 + 3) + 5 = 10 + 5 = 15$

, $7 + 3 + 5 = 7 + (3 + 5) = 7 + 8 = 15$

, then : $(7 + 3) + 5 = 7 + (3 + 5)$

This means : The addends can be grouped in any order and the result is always the same.
i.e. The addition operation of natural numbers is associative.

4 *The existence of additive neutral (additive identity)*

We know that : $0 + 6 = 6$ and $6 + 0 = 6$

This means : The value of a natural number doesn't change if we add zero to it.
i.e. Zero is the additive neutral element in $\mathbb{N}$.

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Lesson Three

Summary

For any natural numbers a , b and c , then

The property	Description in symbols	Example
① Closure	$a \in \mathbb{N}$, $b \in \mathbb{N}$ $(a + b) \in \mathbb{N}$	$6 \in \mathbb{N}$, $4 \in \mathbb{N}$ $6 + 4 = 10 \in \mathbb{N}$
② Commutative	$a + b = b + a$	$2 + 5 = 5 + 2 = 7$
③ Associative	$(a + b) + c = a + (b + c)$	$(2 + 1) + 5 = 2 + (1 + 5) = 8$
④ Additive identity	$a + 0 = 0 + a = a$	$7 + 0 = 0 + 7 = 7$

Example 2

Use the commutative and associative properties to simplify finding each of the following :

[a] 37 + 19 + 63 **[b]** 44 + 67 + 56 + 33

Solution

[a] 37 + 19 + 63 = 37 + 63 + 19 (Commutative property)

= (37 + 63) + 19 (Associative property)

= 100 + 19 = 119

[b] 44 + 67 + 56 + 33 = (44 + 56) + (67 + 33)

(Commutative and associative properties)

= 100 + 100 = 200

Try by yourself

Complete :

999 + 523 + 1 = 999 + 1 + ... (..... property).

= (999 + 1) + ... (..... property).

= + ...

=

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Unit One

Second Subtraction operation on ℕ

We can use the number line to find the difference between two natural numbers.

For example :

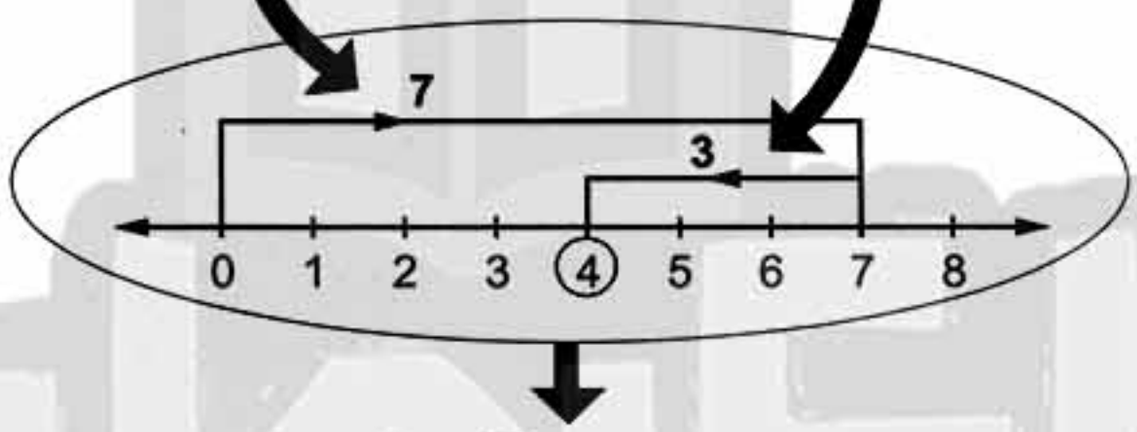
To find 7 – 3 using the number line , do as the following :

First :

Start at **0** and move **7** units to the **right** , we reach the number **7**

Second :

From **7** move **3** units to the left , we reach the number **4**



Then :

$7 - 3 = 4$

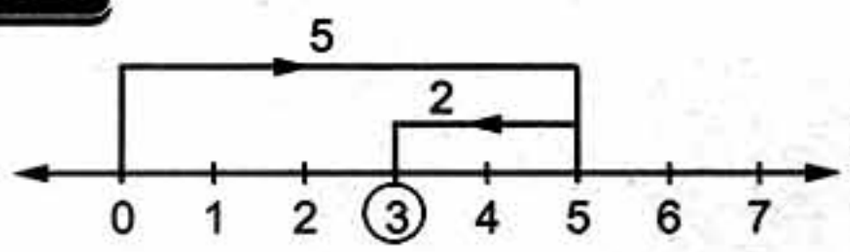
Example 3

Subtract if possible using the number line :

[a] $5 - 2$ [b] $2 - 5$

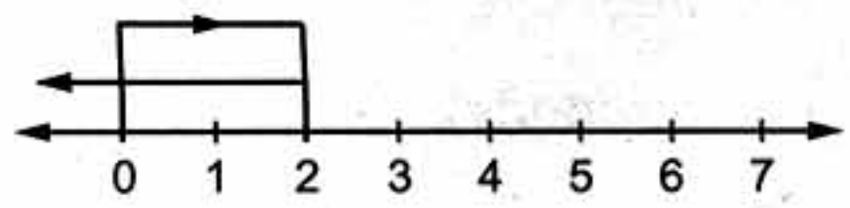
Solution

[a]



$5 - 2 = 3$

[b]



It is clear that the subtraction operation $2 - 5$ is not possible in ℕ because it will be out of the set of natural numbers.

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Lesson Three

Remark

2 – 5 is not possible in $\mathbb{N}$ because 2 < 5

i.e. For any two natural numbers a and b , then

a – b is possibe in $\mathbb{N}$ only if : a ≥ b

Now , does the subtraction operation of natural numbers have the same properties of addition operation of natural numbers ? !!

[1] From the previous example we found that :

2 – 5 is not possible in $\mathbb{N}$

So , we say that : The subtraction operation is not always possible in $\mathbb{N}$
i.e. $\mathbb{N}$ is not closed under subtraction operation.

[2] From the previous example we also found that :

5 – 2 = 3 but 2 – 5 is not possible in $\mathbb{N}$

So , The subtraction operation of natural numbers is not commutative.

[3] 5 – (3 – 1) = 5 – 2 = 3 but (5 – 3) – 1 = 2 – 1 = 1

we notice that : 5 – (3 – 1) ≠ (5 – 3) – 1

So , The subtraction operation of natural numbers is not associative.

[4] The subtraction operation of natural numbers has no neutral element.

Example 4

Complete using $\in$ ***or*** $\notin$ **:**

[a] 10 – 6 $\mathbb{N}$

[b] 7 – 9 $\mathbb{N}$

[c] 100 – 100 $\mathbb{N}$

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Unit One

Solution

[a] ∈ "because 10 > 6"

[b] ∉ "because 7 < 9"

[b] ∈ "because 100 = 100"

Try by yourself

Complete using ∈ or ∉ :

[a] 15 – 25 ℕ

[b] 2852 – 2825 ℕ

[c] 105 – 105 ℕ

Notice that :

- An even number + an even number = an even number.
 For example : • 2 + 4 = 6 • 6 + 6 = 12
- An odd number + an odd number = an even number.
 For example : • 3 + 5 = 8 • 7 + 7 = 14
- An even number + an odd number = an odd number.
 For example : • 2 + 3 = 5 • 5 + 4 = 9

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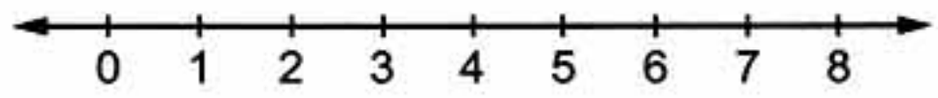
Lesson Three

📖 From the school book

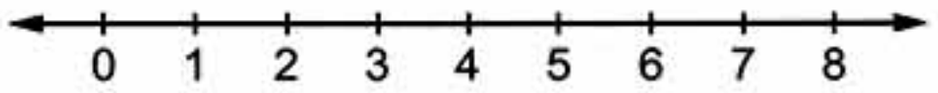
Exercise 3 Addition operation – Subtraction operation on ℕ

1 Use the number line to find each of the following :

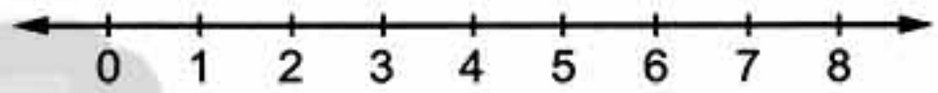
(a) 4 + 2 = ...



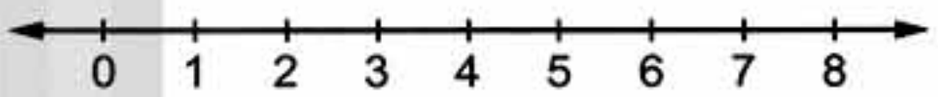
(b) 7 – 5 = ...



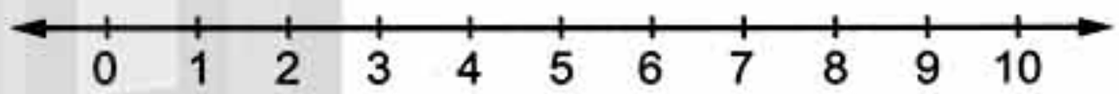
(c) 1 + 4 = ...



(d) 6 – 6 = ...



(e) 2 + 5 + 1 = ...



(f) 3 + 5 – 1 = ...



2 Complete to get a true statement :

(a) 📖 213 + 57 = 57 + ... (..... property)

(b) 149 + 673 = 673 + ... (..... property)

(c) 17 + ... = ... + 17 = 17 (..... property)

(d) 📖 28 + (72 + 59) = (28 + ...) + 59 (..... property)

(e) (61 + 715) + 3 547 = ... + (715 + 3 547) (..... property)

(f) a + ... = b + ... (..... property)

(g) (..... + a) + b = c + (..... + b) (..... property)

3 Find the sum using commutative and associative properties in ℕ state the property used :

(a) 28 + 15 + 72

(b) 📖 257 + 71 + 49

(c) 📖 753 + 972 + 247

(d) 76 + 15 + 85 + 24

(e) 672 + 665 + 335 + 328

(f) 📖 973 + 299 + 227 + 901

(g) 38 + 46 + 62 + 54 + 79

(h) 53 + 62 + 75 + 47 + 25 + 38

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Unit One

4 Complete using ∈ or ∉ :

(a) (3 + 7) ℕ
(b) (45 – 35) ℕ
(c) (8 – 10) ℕ
(d) (80 – 80) ℕ
(e) (0 – 0) ℕ
(f) (28727 – 9543) ℕ
(g) (16 – 9) – 7 ℕ
(h) 3 – (9 – 2) ℕ

5 Complete with = or ≠ :

(a) 35 – 28 28 – 35
(b) (17 + 90) + 125 17 + (90 + 125)
(c) 0 – 25 25 – 0
(d) 208 + 3 541 3 541 + 208
(e) (215 – 147) – 69 215 – (147 – 69)

6 Complete the following expressions by using > , < or = :

(a) 714 + 359 359 + 714
(b) 1 248 + 890 1 247 + 890
(c) 17 248 + 0 17 248
(d) (74 + 705) + 19 74 + (705 + 19)
(e) (802 + 65) + 19 19 + (65 + 801)
(f) (93 + 87) – (87 + 39) 0

7 Mark (✓) for the correct statements and (✗) for the incorrect ones :

(a) The set of natural numbers is closed under the subtraction. ()
(b) The addition operation of natural numbers is associative. ()
(c) Zero is the neutral element for addition. ()
(d) The addition operation of natural numbers is commutative. ()
(e) The subtraction operation of natural numbers is associative. ()
(f) The set of natural numbers is closed under the addition. ()
(g) The subtraction operation of natural numbers is commutative. ()
(h) The difference between any two natural numbers ∈ ℕ. ()

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Lesson Three

8 Complete using (odd or even) :

(a) 📖 The sum of two odd numbers = ... number.

(b) The sum of two even numbers = ... number.

(c) 📖 An odd number + an even number = ... number.

(d) 📖 If x is an odd number , then $(x + 2)$ is number.

(e) If x is an even number , then $(x + 2)$ is number.

(f) If x is an even number , then $(x + 1)$ is number.

(g) 📖 If x is an odd number , then $(x - 1)$ is number.



Challenge

9 Without doing operations, complete the following expressions with > or < or = :

(a) 27 + 15 27 – 15

(b) 5 874 – 3 501 5 874 – 3 502

(c) 867 – 231 767 – 131

(d) 503 – 0 313 – 10

(e) (915 – 624) + 53 915 – (624 + 53)

(f) (384 – 157) – 64 384 – (157 – 64)

10 Observe the following operations :

$$\begin{array}{r} 275 \\ +\ 319 \\ \hline 594 \end{array} \qquad \begin{array}{r} 614 \\ +\ 28 \\ \hline 642 \end{array} \qquad \begin{array}{r} 3716 \\ +\ 594 \\ \hline 4310 \end{array}$$

642 + 355 = 997 594 + 642 = 1 236

Then , find the following results without making operations :

(a) 594 + 3 716 = ...

(b) 355 + ... = 997

(c) 319 + 275 = ...

(d) 275 + 319 + 3 716 = ...

(e) 355 + 28 + 614 = ...

(f) 28 + 319 + 275 + 614 = ...

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Unit One

Lesson 4 Follow : Operations on natural numbers (Multiplication operation - Division operation)

First Multiplication operation on ℕ

• We know that the multiplication operation is a repeated addition operation.

For example : $4 \times 3 = 4 + 4 + 4$

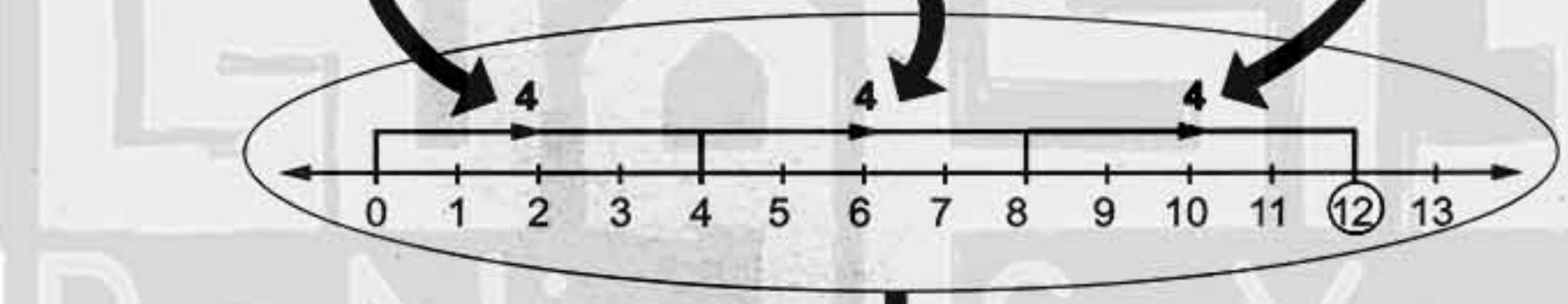
• So , we can use the number line to find the product of two natural numbers.

For example : To find 4×3 using the number line , do as the following knowing that $4 \times 3 = 4 + 4 + 4$:

First : Start at **0** and move **4** units to the **right** , we reach the number.

Second : From **4** move **4** more units to the **right** , we reach the number **8**

Third : From **8** move **4** more units to the **right** we reach the number **12**



Then :

$4 \times 3 = 12$

Properties of multiplication of natural numbers

1 Closure property

We know that : 2 is a natural number and 5 is a natural number , then $2 \times 5 = 10$, 10 is also a natural number.

This means : The product of any two natural numbers is a natural number.

i.e. The multiplication operation is always possible in ℕ or ℕ is closed under the multiplication operation.

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2 Commutative property

Notice that : $5 \times 8 = 40$ and $8 \times 5 = 40$

then : $5 \times 8 = 8 \times 5$

This means : Interchanging factors doesn't affect the product.
i.e. The multiplication operation of natural numbers is commutative.

3 Associative property

Notice that : $2 \times 5 \times 3 = (2 \times 5) \times 3 = 10 \times 3 = 30$

$2 \times 5 \times 3 = 2 \times (5 \times 3) = 2 \times 15 = 30$

then : $(2 \times 5) \times 3 = 2 \times (5 \times 3)$

This means : The factors can be grouped in any order and the result is always the same.
i.e. The multiplication operation of natural numbers is associative.

4 The existence of multiplicative neutral (multiplicative identity) :

We know that : $1 \times 5 = 5 \times 1 = 5$

This means : The value of the natural numbers doesn't change if we multiplied it by one.
i.e. One is the multiplicative neutral in $\mathbb{N}$.

5 Multiplication by zero :

We know that : $5 \times 0 = 0 \times 5 = 0$, $35 \times 0 = 0 \times 35 = 0$

This means : The product of any natural number by zero equals zero.

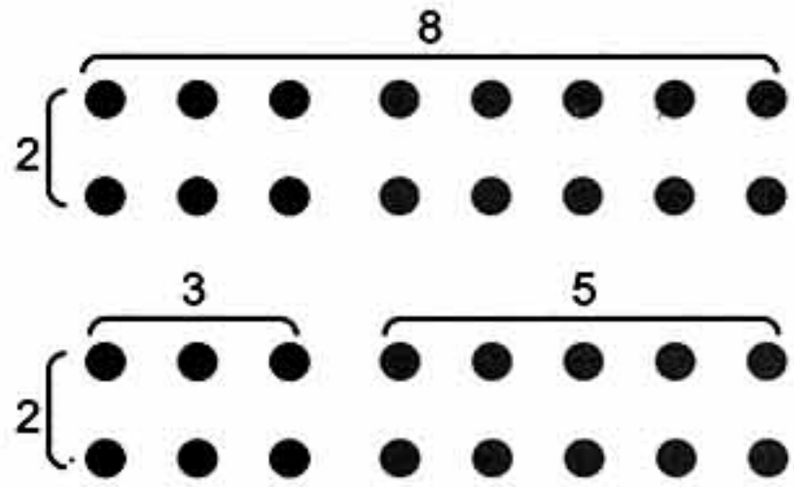
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6 Distribution of multiplication over addition property :

We know that :

$2 \times (3 + 5) = 2 \times 8$
$= 16$



, $2 \times 3 + 2 \times 5 = 6 + 10$
$= 16$

, then : $2 \times (3 + 5) = 2 \times 3 + 2 \times 5$

This means : Multiplication operation distributes over addition in $\mathbb{N}$.

Remarks

- We can generalise the distribution of multiplication over addition property for any number of the numbers inside the brackets.

For example : $5 \times (3 + 7 + 4) = 5 \times 3 + 5 \times 7 + 5 \times 4$

- Multiplication distributes over subtraction in $\mathbb{N}$ (when subtraction is possible).

For example : $4 \times (7 - 2) = (4 \times 7) - (4 \times 2) = 28 - 8 = 20$

Summary

For any three natural numbers a , b and c , then :

The property	Description in symbols	Example
1 **Closure**	$a \in \mathbb{N}$, $b \in \mathbb{N}$ $(a \times b) \in \mathbb{N}$	$2 \in \mathbb{N}$, $5 \in \mathbb{N}$ $2 \times 5 = 10 \in \mathbb{N}$
2 **Commutative**	$a \times b = b \times a$	$3 \times 6 = 6 \times 3 = 18$
3 **Associative**	$(a \times b) \times c = a \times (b \times c)$ $= a \times b \times c$	$(5 \times 2) \times 4 = 5 \times (2 \times 4)$ $= 40$
4 **Multiplicative identity**	$a \times 1 = 1 \times a = a$	$5 \times 1 = 1 \times 5 = 5$

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Lesson Four

5 **Multiplication by zero**	$a \times 0 = 0 \times a = 0$	$8 \times 0 = 0 \times 8 = 0$
6 **Multiplication distributes over addition**	$a \times (b + c) = a \times b + a \times c$	$3 \times (8 + 7)$ $= 3 \times 8 + 3 \times 7$ $= 24 + 21 = 45$

Example 1

Use the associative and commutative properties to simplify each of the following :

[a] $5 \times 37 \times 2$ **[b]** $25 \times 7 \times 9 \times 4$

[c] $16 \times 21 \times 125$

Solution

[a] $5 \times 37 \times 2 = 5 \times 2 \times 37$ (Commutative property)

$= (5 \times 2) \times 37$ (Associative property)

$= 10 \times 37$

$= 370$

[b] $25 \times 7 \times 9 \times 4 = (25 \times 4) \times (7 \times 9)$

(Commutative and associative properties)

$= 100 \times 63 = 6300$

[c] $16 \times 21 \times 125 = 21 \times 16 \times 125$ (Commutative property)

$= 21 \times 2 \times 8 \times 125$

$= (21 \times 2) \times (8 \times 125)$ (Associative property)

$= 42 \times 1000$

$= 42000$

Try by yourself

Complete :

$4 \times 62 \times 25 = 4 \times 25 \times$ (..... property)

$= (4 \times 25) \times$ (..... property)

$=$ $\times$ $=$

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Example 2

Use the distributive property to find :

[a] $34 \times 75 + 34 \times 25$ **[b]** $48 \times 17 - 28 \times 17$

[c] $19 \times 99 + 19$

Solution

[a] $34 \times 75 + 34 \times 25 = 34 \times (75 + 25) = 34 \times 100 = 3400$

[b] $48 \times 17 - 28 \times 17 = (48 - 28) \times 17 = 20 \times 17 = 340$

[c] Notice that : $19 = 19 \times 1$

So , $19 \times 99 + 19 = 19 \times 99 + 19 \times 1 = 19 \times (99 + 1) = 19 \times 100 = 1900$

Example 3

Use the distributive property to find :

[a] 103×25 **[b]** 37×98 **[c]** 15×742

Solution

[a] $103 \times 25 = (100 + 3) \times 25 = (100 \times 25) + (3 \times 25) = 2500 + 75 = 2575$

[b] $37 \times 98 = 37 \times (100 - 2) = (37 \times 100) - (37 \times 2) = 3700 - 74 = 3626$

[c] $15 \times 742 = 15 \times (2 + 40 + 700) = (15 \times 2) + (15 \times 40) + (15 \times 700)$

$= 30 + 600 + 10500 = 11130$

Try by yourself

Use the distributive property to find :

[a] $23 \times 15 + 23 \times 85$

.....

[b] 74×99

.....

[c] 24×101

.....

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Lesson Four

Notice that

- An even number × an even number = an even number

 For example : • $2 \times 4 = 8$ • $6 \times 6 = 36$

- An odd number × an odd number = an odd number

 For example : • $3 \times 5 = 15$ • $7 \times 7 = 49$

- An even number × an odd number = an even number

 For example : • $2 \times 3 = 6$ • $5 \times 4 = 20$

Second Division operation on $\mathbb{N}$

We know that

The division is the inverse operation of multiplication

For example :

- $18 \div 3 = 6$ because : $3 \times 6 = 18$
- $45 \div 5 = 9$ because : $5 \times 9 = 45$

Now , does the division operation of natural numbers have the same properties of multiplication of natural numbers ? !!

[1] While $12 \div 5$ does not equal a natural number because there is no natural number , which when multiplied by 5 , the result is 12

So, we say that : The division operation is not always possible in $\mathbb{N}$
i.e. $\mathbb{N}$ is not closed under the division operation.

[2] $12 \div 3 = 4$ but $3 \div 12$ is not possible in $\mathbb{N}$

i.e. $12 \div 3 \neq 3 \div 12$

So, The division operation is not commutative in $\mathbb{N}$

[3] $(24 \div 4) \div 2 = 6 \div 2 = 3$ but $24 \div (4 \div 2) = 24 \div 2 = 12$

i.e. $(24 \div 4) \div 2 \neq 24 \div (4 \div 2)$

So, The division operation is not associative in $\mathbb{N}$

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[4] The division operation in $\mathbb{N}$ has no neutral element.

[5] The division of any number ($\neq 0$) on zero is not defined.

For example : $5 \div 0$ is not defined , because there is no natural number , if multiplied by zero produces 5

But if we divide zero by any non-zero natural number , the result is zero.

For example : $\frac{0}{5} = 0$, $\frac{0}{3} = 0$, ... etc.

[6] $60 \div (6 + 4) = 60 \div 10 = 6$

and $(60 \div 6) + (60 \div 4) = 10 + 15 = 25$

i.e. $60 \div (6 + 4) \neq (60 \div 6) + (60 \div 4)$

So, The division operation does not distribute over addition in $\mathbb{N}$.

Example 4

Complete using $\in$ or $\notin$:

[a] $0 \div 3$ $\mathbb{N}$

[b] $\frac{5}{0}$ $\mathbb{N}$

[c] $\frac{10}{5-5}$ $\mathbb{N}$

[d] $28 \div 5$ $\mathbb{N}$

Solution

[a] $\in$ **[b]** $\notin$ **[c]** $\notin$ **[d]** $\notin$

Try by yourself

Complete using $\in$ or $\notin$:

[a] $25 \div 3$ $\mathbb{N}$

[b] $\frac{0}{10}$ $\mathbb{N}$

[c] $30 \div 0$ $\mathbb{N}$

[d] $\frac{7}{7-7}$ $\mathbb{N}$

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Lesson Four

From the school book

Exercise 4 Multiplication operation - Division operation on $\mathbb{N}$

1 Use the commutative and associative properties to simplify finding the result of each of the following :

(a) $2 \times 347 \times 5$
(b) $4 \times 128 \times 25$
(c) $8 \times 49 \times 125$
(d) $20 \times 16 \times 5$
(e) $16 \times 75 \times 125$
(f) $2 \times 25 \times 75 \times 4$
(g) $4 \times 5 \times 25 \times 6$
(h) $125 \times 25 \times 8 \times 4$

2 Use the distributive property to simplify finding the result of each of the following :

(a) $35 \times 64 + 35 \times 36$
(b) $37 \times 73 + 63 \times 73$
(c) $137 \times 43 - 37 \times 43$
(d) $59 \times 67 - 59 \times 57$
(e) $16 \times 999 + 16$
(f) $37 \times 101 - 37$

3 Use the distributive property to find the value of each of the following :

(a) 52×101
(b) 915×1001
(c) 45×99
(d) 572×99
(e) 3×23
(f) 502×50
(g) 35×1005
(h) 25×427
(i) 15×284

4 Complete with $\in$ or $\notin$:

(a) $(4 \div 2)$ $\mathbb{N}$
(b) $\frac{0}{7}$ $\mathbb{N}$
(c) (4×2) $\mathbb{N}$
(d) $(3 \div 4)$ $\mathbb{N}$
(e) $(18 \div 4)$ $\mathbb{N}$
(f) $(12 \div 3)$ $\mathbb{N}$
(g) $\frac{3}{2-2}$ $\mathbb{N}$
(h) $(3 + 7)$ $\mathbb{N}$

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(i) 🕮 (8 – 8) ℕ

(j) 🕮 (0 × 9) ℕ

(k) (512 + 247) ℕ

(l) (18 – 25) ℕ

(m) (7 ÷ 7) ℕ

(n) (25 ÷ 1) ℕ

(o) [(6 × 3) ÷ 9] ℕ

(p) [(5 × 6) ÷ 12] ℕ

(q) [(6 ÷ 3) × 5] ℕ

(r) [(2 ÷ 4) × 11] ℕ

(s) [(7 + 13) ÷ 0] ℕ

(t) [(0 ÷ (41 – 22)] ℕ

(u) 🕮 (7 × 3 – 3 × 7) ℕ

(v) 🕮 (7 × 2 – 7 × 5) ℕ

5 Choose the correct answer from those given :

(a) If $a \in \mathbb{N}$, $b \in \mathbb{N}$ and $c \in \mathbb{N}$, then $(a \times b) \times c = a \times (b \times c)$, that is called property.

(closure *or* associative *or* commutative *or* distributive)

(b) $40 \times 98 = 40 \times 100 - 40 \times$ (1 *or* 2 *or* 40 *or* 98)

(c) $56 \times (100 -$$) = 56 \times 95$ (95 *or* 90 *or* 5 *or* 50)

(d) $27 \times 19 + 73 \times 19 =$ $\times 19$ (10 *or* 100 *or* 27 *or* 73)

(e) $177 \times 13 -$ $\times 13 = 164 \times 13$ (13 *or* 341 *or* 177 *or* 164)

(f) $\frac{0}{5}$ = ... (0 *or* 1 *or* 5 *or* is not defined)

(g) $\frac{7}{0}$ (0 *or* 1 *or* 7 *or* is not defined)

(h) (8 + 6) ÷ 2 = ... (8 *or* 7 *or* 6 *or* 2)

(i) 75 ÷ (5 × 3) = ... (5 *or* 3 *or* 15 *or* 72)

(j) (12 ÷ 2) × = 12 (2 *or* 4 *or* 6 *or* 12)

(k) $\frac{14 - 14}{7}$ = ... (14 *or* 0 *or* 2 *or* is not defined)

(l) $\frac{20 - 20}{16 - 4 \times 3}$ = ... (0 *or* 1 *or* 5 *or* is not defined)

(m) $\frac{7 - 3}{7 - 5}$ = ... (0 *or* 2 *or* 3 *or* is not defined)

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Lesson Four

6 Mark (✓) for the correct statements and (✗) for the incorrect ones :

(a) The set of natural numbers is closed under the multiplication. ()

(b) The multiplication operation of natural numbers is commutative. ()

(c) Zero is the neutral element for multiplication. ()

(d) The multiplication operation of natural numbers is associative. ()

(e) The set of natural numbers is closed under the division. ()

(f) We can divide any natural number by zero. ()

(g) The division operation of natural numbers is associative. ()

(h) 🕮 $(28 \div 6) \in \mathbb{N}$ ()

(i) $12 \div 6 = 6 \div 12$ ()

(j) $40 \div (8 + 2) = (40 \div 8) + (40 \div 2)$ ()

(k) $(36 \div 6) \div 3 = 36 \div (6 \div 3)$ ()

(l) $32 \times (14 \times 58) = 32 \times 14 \times 32 \times 58$ ()

(m) $135 \times 64 = (135 \times 60) + (135 + 4)$ ()

(n) $8 \times 54 = (8 \times 5) + (8 \times 4)$ ()

(o) $12 \times (35 + 14) = 12 \times 35 + 14$ ()

(p) 🕮 $(81 + 112) \times 117 = 117 \times (112 + 81)$ ()

(q) 🕮 $(120 + 80) \times 4 = 120 \times 4 + 80 + 4$ ()

(r) $4 \times (8 - 5) = (4 \times 8) - (4 \times 5)$ ()

(s) $8 \times (7 + 2) = (8 \times 7) + 2$ ()

(t) $7 \times 8 = (4 + 3) \times (4 \times 4)$ ()

7 Complete :

(a) 🕮 The additive neutral element in $\mathbb{N}$ is , the multiplicative neutral element in $\mathbb{N}$ is

(b) $a \times 1 = 1 \times a = a$ (..... property)

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(c) 🕮 If $9 \times 13 = 13 \times x$, then x = ...

(d) 🕮 99 added to the neutral element of multiplication = ...

(e) $(12 \times 4) \times$ $= 12 \times (4 \times 7)$

(f) $(83 \times 514) \times 96 =$ $\times (514 \times 96)$

(g) (..... $\times 10) \times 5 = 20 \times (10 \times 5)$

(h) $\times 75 = 75 \times 1 =$

(i) 🕮 $+ 354 = 354$

(j) $4 \times 10 \times 8 =$ $\times 80 =$

(k) 🕮 $7 \times 0 = \frac{\text{.....}}{9} =$

(l) $(9 \times 5) \times 8 = 9 \times$ = ...

(m) $7 \times (4 +$$) = 7 \times 4 + 7 \times 5$

(n) $5 \times (1 + 4) = 5 \times$ $+ 5 \times$

(o) $16 \times (54 + 71) = 16 \times 54 + 16 \times$

(p) $32 \times 9 + 32 \times 6 =$ $\times$ (..... + ...)

(q) $35 \times 185 + 35 \times$ $= 35 \times 300$

(r) 🕮 $2358 \times 17 = 2358 \times (7 +$)

(s) If $834 = (x \times 100) + 34$, then x = ...

(t) If $3 \times 98 = (x \times 8) + (x \times 90)$, then x = ...

(u) If $75 = 5 + x \times 10$, then x = ...

(v) $\times 1 =$ $\times$ $= 73$

(w) 🕮 An odd number × an even number = ... number

8 Put [> or < or =] :

(a) 12×54 54×12

(b) 15×392 14×392

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Lesson Four

(c) 907 × 0 907

(d) 1 × 6217 6217

(e) 1 × 8215 8210

(f) 85 × 210 86 × 211

(g) (58 × 13) × 29 58 × (14 × 29)

(h) (74 × 705) × 19 74 × (705 × 19)

9 🕮 Let a = 3 , b = 4 and c = 0 , find the value of each of the following :

(a) 2 × a + 5 × b

(b) a × c + b × c

(c) (3 × a + 5 × b) × c

(d) (a + b – c) × (a + b)

(e) (b – a) × (b + a)

10 🕮 Evaluate : (16 + 24) ÷ 4 , (16 ÷ 4) + (24 ÷ 4) what do you notice ?

11 🕮 Write the results of the given expressions in an ascending order :

7 × 10 , 35 – 0 , 178 – 178 , (2 × 3) × 5

12 Name each of the following properties :

(a) For any two natural numbers a and b , their sum (a + b) is also a natural number.

(b) For any two natural numbers a and b , a + b = b +a

(c) For any three natural numbers a , b and c , we have
a + (b + c) = (a + b) + c

(d) For any natural number a , we have a + 0 = 0 + a = a

(e) For any two natural numbers a and b , their product a × b is also a natural number.

(f) For any two natural numbers a and b , we have a × b = b × a

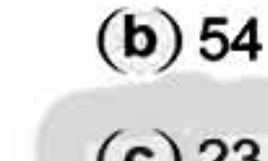
(g) For any three natural numbers a , b and c , we have
a × (b × c) = (a × b) × c

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(h) For any natural number a , we have $a \times 1 = 1 \times a = a$

(i) For any three natural numbers a , b , and c , we have

$a \times (b + c) = (a \times b) + (a \times c)$



Challenge

13 Observe the following multiplications :

23 × 19 = 437	19 × 54 = 1026	23 × 41 = 943	437 × 28 = 12236

Find the following results without making multiplications :

(a) 19 × 23 = ...

(b) 54 × (10 + 9) = ...

(c) 23 × (30 + 11) = ...

(d) 28 × (400 + 30 + 7) = ...

(e) 41 × = 943

(f) 19 × (54 + 23) = ... + ... = ...

(g) 19 × (23 × 28) = ... × = ...

(h) 23 × 60 = 23 × (..... + ...) = ... + ... = ...

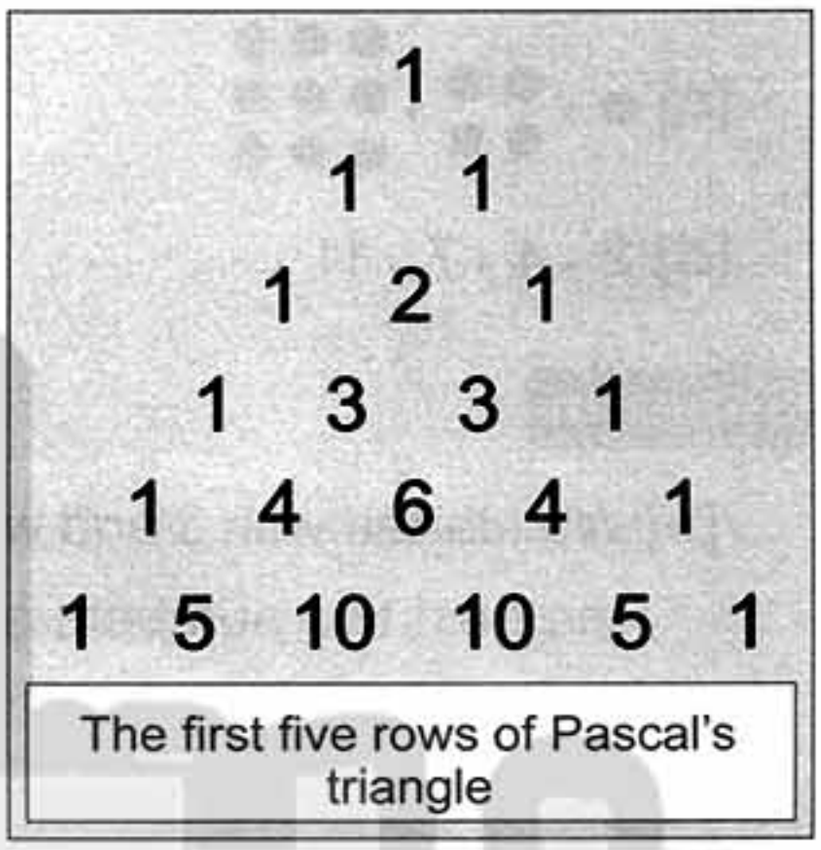
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Lesson 5 Numerical patterns

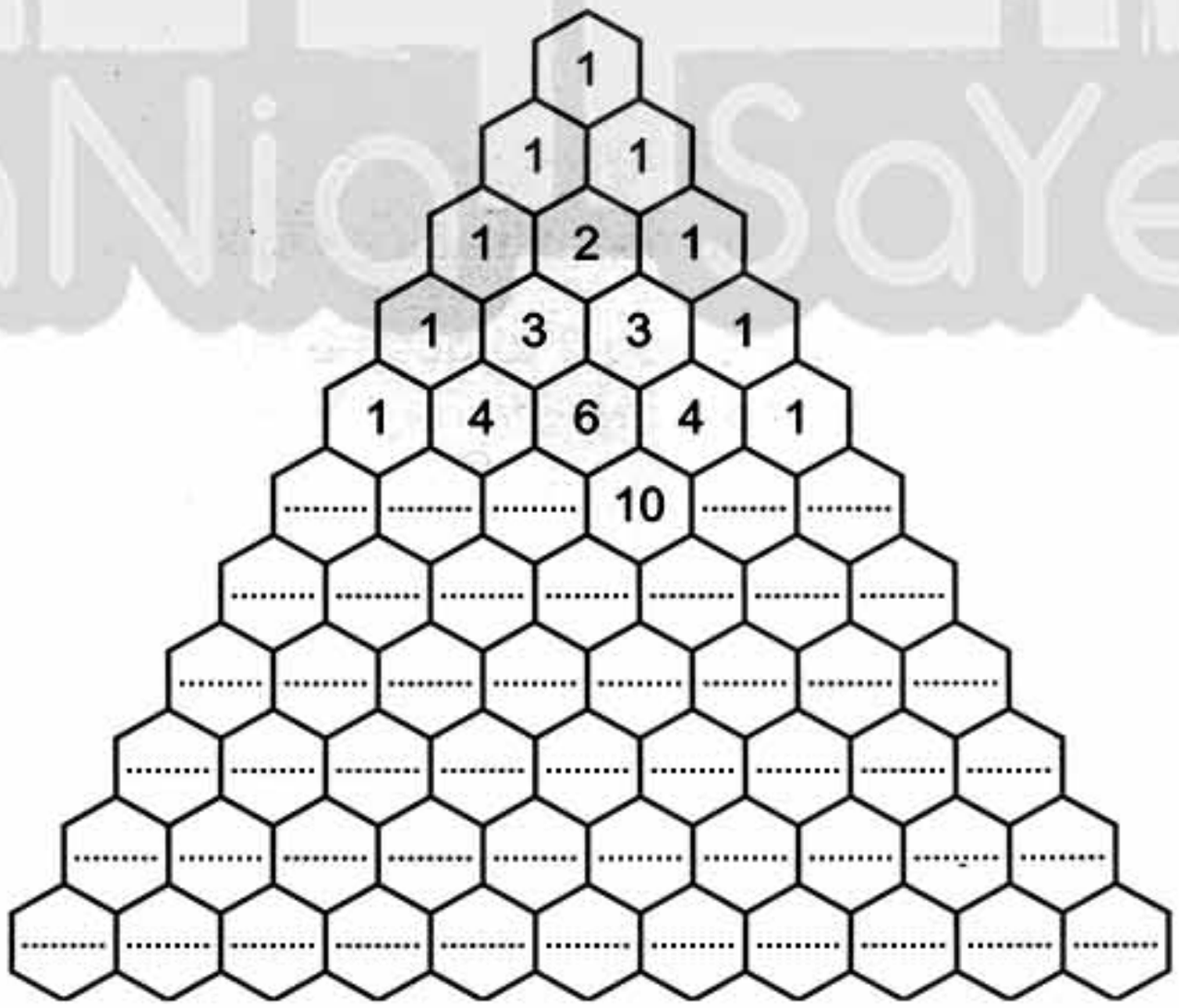
Pascal's triangle

- This is a triangular arrangement of rows of numbers, each row increases by one number.
- Each row, except the first, begins and ends in a 1 written diagonally.
- Beginning with the second row, each number is the sum of the numbers just to the left and right of it in the row above



The first five rows of Pascal's triangle

Complete the following Pascal's triangle :



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Unit One

Example 1

Complete each of the followeing patterns :

[a] 3 , 6 , 9 , 12 , ... , ...

[b] 3 , 6 , 12 , 24 , ... , ...

[c] ● , ●● , ●●● , ...

[d] 2 , 4 , 7 , 11 , ... , ...

Solution

[a] We started with 3 and we added 3 to get the successive number , then the next two numbers are : 15 and 18

3 (+3)→ 6 (+3)→ 9 (+3)→ 12 (+3)→ 15 (+3)→ 18

[b] We started with 3 and we multiplied by 2 to get the successive number , then the next two numbers are : 48 and 96

3 (×2)→ 6 (×2)→ 12 (×2)→ 24 (×2)→ 48 (×2)→ 96

[c] We started with 1 dot (1 × 1) , then 4 dots (2 × 2) , then 9 dots (3 × 3) , then the next numbers is 16 dots (4 × 4) and we represent it as



[d] We started at 2 , then we add 2 to get the successive number , then we added 3 , then added 4 , so the next two numbers is : 16 and 22

2 (+2)→ 4 (+3)→ 7 (+4)→ 11 (+5)→ 16 (+6)→ 22

Try by yourself

Complete each of the following patterns :

[a] 90 , 85 , 80 , ... , ...

[b] 5 , 10 , 20 , 40 , ... , ...

[c] 1 , 2 , 4 , 7 , ... , ...

[c] 5 , 55, 555 , 5555 , ... , ...

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Lesson Five

From the school book

Exercise 5 Numerical patterns

1 Complete in the same pattern :

(a) 2 , 4 , 8 , 16 , ... , ...

(b) 5 , 7 , 9 , 11 , ... , ...

(c) 1 , 4 , 7 , 10 , ... , ...

(d) 2 , 6 , 18 , 54 , ... , ...

(e) 2 , 7 , 12 , 17 , ... , ...

(f) 2 , 8 , 32 , ... , ...

(g) 1 , 3 , 9 , 27 , ... , ...

(h) 5 , 15 , 25 , 35 , ... , ...

(i) 12 , 10 , 8 , 6 , ... , ...

(j) 95 , 80 , 65 , 50 , ... , ...

(k) 1 , 2 , 4 , 7 , ... , ...

(l) 1 , 4 , 8 , 13 , ... , ...

(m) 2 , 5 , 10 , 17 , 26 , ... , ...

(n) 25 , 20 , 16 , 13 , ... , ...

(o) 142 , 143 , 145 , 148 , 152 , ...

(p) 89 , 79 , 70 , 62 , 55 , ...

(q) 18 , 9 , 4.5 , ... , ...

(r) 1 , 1 , 2 , 3 , 5 , 8 , ... , ...

(s) 7 , 77 , 777 , 7777 , ... , ...

(t) 1×1 , 2×2 , 3×3 , 4×4 , ... , ...

(u) 1×2 , 2×4 , 3×8 , ... , ...

(v) (2 , 5) , (4 , 7) , (6 , 9) , (8 , ...) , (10 , ...) , (..... , 15)

(w) (A , Z) , (B , Y) , (C , X) , (D , ...) , (E , ...) , (..... , U)

(x)



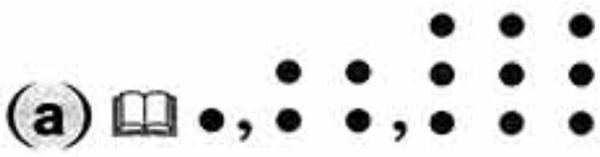
(y) , ... , 8 , 11 , 14 , ... , ...

(z) , ... , 12 , 24 , 48 , ... , ...

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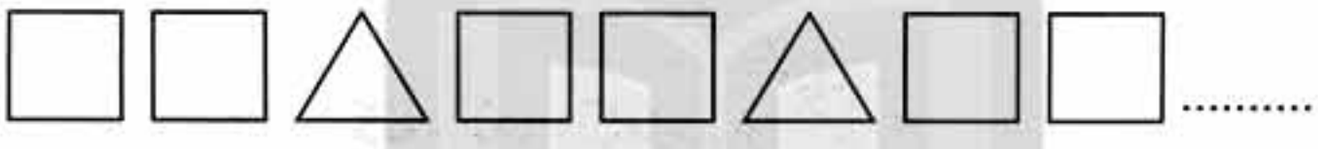
Unit One

2 Complete each of the following visual patterns :

(a) 📖 , ...

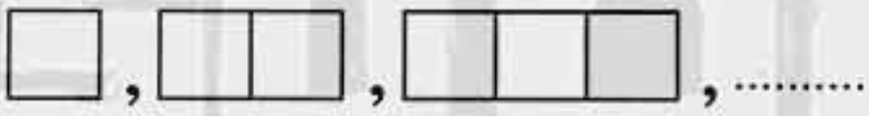
(b) 📖 , ...

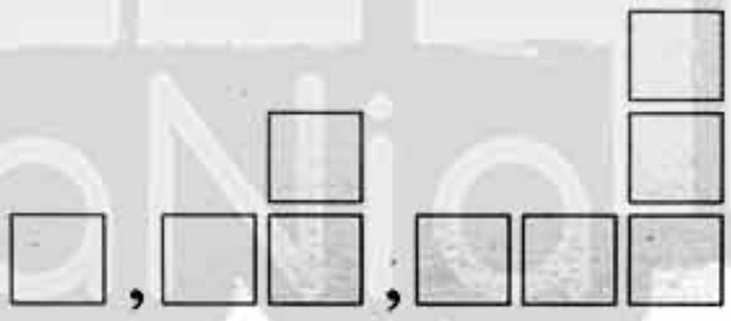
(c) , ...

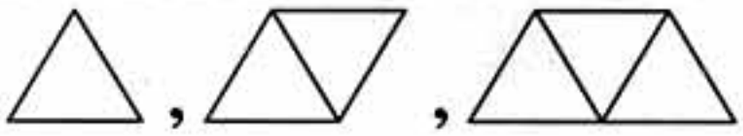
(d) 

(e) , ...

(f) , ...

(g) , ...

(h) 📖 , ...

(i) , ...

(j) , ...

3 📖 Evaluate using a calculator. Write only 5 decimals without approximation.

$\frac{1}{9} = 0.11111$

$\frac{2}{9}$ = ...

$\frac{3}{9}$ = ...

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Lesson Five

Without using your calculator , can you evaluate :

$\frac{4}{9}$ = ... $\frac{5}{9}$ = ... $\frac{6}{9}$ = ...

$\frac{7}{9}$ = ... $\frac{8}{9}$ = ...

4 🕮 Sherine sold a discount card that gives a discount to its owner at some fast food restaurants for L.E. 38. If the price of the card had increased L.E. 4 annually during her owning to the card for 4 years. How much did she spend to buy this card ?

5 🕮 Hany has 3 test rabbits in his lab. If the number of rabbits is doubled each certain period. How many rabbits will be there in 5 periods ?

6 🕮 Dina paid L.E. 34 for her annual membership card in a science club. Dina told her friend Hanaa that this amount is increased by L.E. 11 annually. How much will it be after 10 years ?



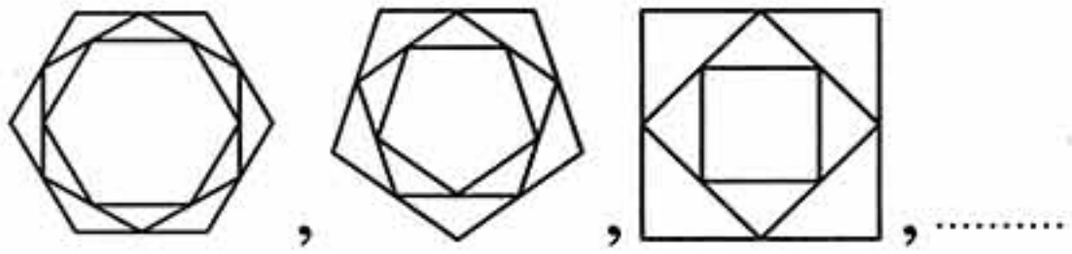
Challenge

7 🕮 **Write down three successive numbers in each pattern :**

(a) 299 , 293 , 288 , 282 , 277 , ... , ... , ...

(b) 480 , 492 , 486 , 498 , 492 , 504 , ... , ... , ...

8 **Discover the rule and complete by drawing the next figure :**



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Unit One

General exercise on unit one
from the school book

First Completion questions

Complete the following to get a correct statement :

1. The additive neutral element in ($\mathbb{N}$) is , while the multiplicative neutral element in ($\mathbb{N}$) is
2. The least natural number is
3. The least number in the set of counting numbers is
4. The set of natural numbers less than 5 is
5. The set of natural numbers which are more than 4 and less than 9 is
6. The set of prime numbers which are less than 14 is
7. The multiplicative neutral element in natural numbers plus 99 = ...
8. If X = $\{x : x \in \mathbb{N} , 1 \leq x < 6\}$, then X = ...
9. If X is an odd number , then $x + 2$ is number.
10. If x is an odd number , then $(x - 1)$ is number.
11. The number 7 lies on the right of the number directly and on the left of the number , then 7 > and 7 <
12. If $7 \times 15 = 15 \times x$, then x = ...
13. If $945 = (x \times 100) + 45$, then x = ...
14. If $4 \times 35 = (x \times 5) + (x \times 30)$, then x = ...
15. If $86 = 6 + x \times 10$, then x = ...
16. $53 + 48 + 47 = (53 +$$) + 48 =$ + ... = ...
17. If $86 \times 15 = 86 \times x + 86 \times 10$, then x = ...
18. $(137 +$$) - (64 +$$) = 200 -$ $= 100$
19. $\frac{16 - \text{.....}}{8} - \frac{\text{.....} - 25}{5}$ = zero.

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General exercise

20 214 , 210 , 206 , ... , ... , ... (in the same pattern)

21 5 , 15 , 25 , ... , ... , ... (in the same pattern)

22 1 , 4 , 8 , 13 , ... , ... (in the same pattern)

23 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

Second Multiple-choice questions

Choose the correct answer from those given :

1 1 , 4 , 9 , 16 , ... (23 *or* 24 *or* 25)

2 If $X = \{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then X = ...
($\{4\}$ *or* $\{3\}$ *or* $\{3 , 4\}$ *or* $\{4 , 5\}$)

3 If O is the set of odd numbers , then O $\mathbb{N}$
($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

4 The set of even numbers (E) $\cap$ the set of numbers (P) = ...
(P *or* O *or* $\mathbb{N}$ *or* $\{2\}$)

5 (49 ÷ 7) $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

6 $(x - 15)$ $(x - 14)$ where x is a natural number more than 17
(> *or* < *or* = *or* $\geq$)

7 The least prime number × any prime number = ... number.
(odd *or* even *or* prime *or* otherwise)

8 (4 ×) × 78 = 7800 (5 *or* 25 *or* 50 *or* 125)

9 (5 – 7) $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

10 8 × = ... × 8 = 1000 (992 *or* 25 *or* 125 *or* 250)

11 $\frac{24 - 6}{12 - 9}$ $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

12 $\{2 , 3 , 0.4\}$ $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

Third Essay questions

Answer the following questions :

1 **Use the distributive property to get the product of each of the following :**

(a) 18 × 99 (b) 56 × 1002

(c) 517 × 99 (d) 316 × 1001

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Unit One

2 If U = $\{x : x \in \mathbb{N} , 1 \leq x \leq 7\}$, X is the set of factors of the number 6 , Y = $\{3 , 6 , 5\}$, find :

(a) $X \cap Y$ (b) $X \cup Y$ (c) $X - Y$

(d) $\grave{X}$ (e) $\grave{Y} \cap (Y - \grave{X})$

3 Write by the list method the set X = $\{x : x \in N , 3 \leq x < 8\}$, then represent its elements on the number line.

4 Using the properties of commutation and association in $\mathbb{N}$ to find the result of addition in each of the following (Write the used property) :

(a) 872 + 199 + 128 + 801 (b) 413 + 152 + 187 + 348

(c) 156 + 871 + 344 + 129 (d) 642 + 173 + 358 + 27

(e) 612 + 154 + 88 + 846 (f) 192 + 488 + 308 + 12

5 Use the distributive property to get the product in each of the following :

(a) 98×54 (b) 299×17 (c) 304×25

6 Use the properties of commutation and distribution and association to get the result of each of the following , then check your answer by using the calculator :

(a) 100 (312 + 75 + 188) (b) 84 ($25 \times 4 + 125 \times 8$)

(c) (64 + 135 + 36 + 65) × 17 (d) 76 ($5 \times 400 - 125 \times 16$)

(e) 83 ($125 \times 8 - 45 \times 20$) (f) 20 ($5 \times 8 - 16$)

7 If x is a prime number included between 1 and 6 write down the values of x , then represent the values of $\frac{30}{x}$ on the number line.

8 Five consecutive odd numbers , its middle number is (x + 12) , write down these numbers.

9 If : (x + 3) is the smallest number of four consecutive even numbers , write down these numbers.

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Test on Unit One

1 Choose the correct answer from the given ones :

(1) 25 $\mathbb{N}$ ($\subset$ or $\not\subset$ or $\notin$ or $\in$)

(2) $(8 \times 3) \times 5 =$ $\times (3 \times 5)$ (3 or 5 or 8 or 35)

(3) If O is the set of odd numbers , E is the set of even numbers , then
$O \cap E =$ ($\mathbb{N}$ or O or E or $\varnothing$)

(4) c a 

where a , c are two natural numbers.
(> or = or <)

(5) $\{4 , \frac{1}{5}\}$ $\mathbb{N}$ ($\in$ or $\notin$ or $\subset$ or $\not\subset$)

(6) If $X = \{x : x \in \mathbb{N}, 2 \leq x \leq 3\}$, then X = ...
($\{2 , 3\}$ or $\{3\}$ or $\{2\}$ or $\varnothing$)

(7) The additive neutral element in $\mathbb{N}$ is (1 or 0 or 2 or 3)

(8) $(4 \times$$) \times 78 = 7\,800$ (5 or 25 or 50 or 125)

(9) $49 \div 8$ $\mathbb{N}$ ($\in$ or $\notin$ or $\subset$ or $\not\subset$)

(10) If x is an odd number , then $x + 1$ is number.
(odd or even or prime)

2 Complete each of the following :

(11) The multiplicative neutral element in $\mathbb{N}$ is

(12) The set of natural numbers less than 7 is

(13) 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

(14) The smallest natural number is

(15) $23 \times 36 + 23 \times 64 = 23 \times ($..... + ...$) =$ $\times$ = ...

(16) If $9 \times 7 = 7 \times 9$, then its called property.

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3 Answer the following :

(17) Write in the list method the set : $X = \{x : x \in \mathbb{N} , 3 \leq x < 8\}$, then represent its elements on the number line.

.....

(18) If $X = \{a : a \in \mathbb{N} , 1 \leq a < 5\}$, $Y = \{4 , 5 , 6\}$

Find :

(1) $X \cap Y$ (2) $X \cup Y$ (3) $X - Y$

.....

.....

(19) Use the commutative and associative properties in $\mathbb{N}$ to calculate each of the following :

(1) $72 + 89 + 28 + 11$ (2) $8 \times 37 \times 125$

.....

.....

.....

(20) Use the distributive prroperty to get the product of : 18×99

.....

RaNia SaYed

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Unit Two

Equations

Lesson 1 : Mathematical expressions.

Lesson 2 : The constant and the variable.

Lesson 3 : Equations.

A general exercise from the school book is given at the end of the unit.



RaNia SaYed

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Unit Two

Lesson 1 Mathematical expressions

1 Numerical expressions

- The numerical expression contains only numbers and operations.

For example : • 2 + 4 , 5 – 3
• 6 × 7 , 50 ÷ 10

2 Symbolic expressions

- The symbolic expression contains numbers , symbols and operations.

For example : • x + 4 , 5 – y
• 6 × Z , L ÷ 10
• 2 x – 3

Note that :
2 x means 2 × x

Remarks

You will need to translate between words and symbolic expressions to be successful in math. The table below shows some of the ways to translate between them :

+	–	×	÷
Add , plus , sum , increased by	Subtract , minus , difference , less than	Mulitiply , times , product	Divided by , quotient

Example 1

Write a symbolic expression for each of verbal expression :

Verbal expression	Symbolic expression
a. Five more than the number x	
b. Three less than the number y	
c. Four times a number x	
d. A number y divided by 6	
e. Twice of a number b	
f. Six less than half a number x	
g. Eight decreased by three times a number x	
h. Twice the sum of a number m and seven	

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Solution

[a] $x + 5$ [b] $y - 3$ [c] $4x$ [d] $\frac{y}{6}$ [e] $2b$

[f] $\frac{1}{2}x - 6$ [g] $8 - 3x$ [h] $2(m + 7)$

Example 2

If Sally is x years old now , use x to write an expression for each of the following numbers :

[a] The age of Sally after nine years.

[b] The age of Sally five years ago.

Solution

[a] $x + 9$ [b] $x - 5$

Try by yourself

Complete using a suitable symbolic expressions :

[a] Add 5 to the number y, the symbolic expression is

[b] Add 3 to four times x, the symbolic expression is

[c] Subtract 4 from the half of the number x , the symbolic expression is

[d] The quotient of k by 2 , the symbolic expression is

Example 3

Give two ways to write each symbolic expression in words :

[a] $x + 4$ **[b]** $m - 5$

[c] $2y$ **[d]** $z \div 3$

Solution

[a] The sum of x and 4 or x increased by 4

[b] The difference of m and 5 or 5 less than m

[c] The product of 2 and y or 2 times y

[d] Z divided by 3 or the quotient of z by 3

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Unit Two

From the school book

Exercise 6 Mathematical expressions

1 Complete using a suitable symbolic expression :

(a) Add 6 to the number x , the symbolic expression is

(b) Subtract 3 from the number y , the symbolic expression is

(c) Multiply 5 by the number z , the symbolic expression is

(d) Divide the number m by 3 , the symbolic expression is

2 Complete the following table as the example :

	Symbole	Add 3	Subtract 7	Multiply by 3	Divide by 4
Example	x	x + 3	x - 7	3 x	$\frac{x}{4}$
(a)	y				
(b)			z – 7		
(c)					$\frac{L}{4}$

3 Complete the following table :

	Verbal expression (in words)	Symbolic expression
(a)	Add 3 to the double of the number x	
(b)	Subtract 5 from the double of the number y	
(c)	Add 7 to three times of the number z	
(d)	Subtract 3 from the half of the number x	
(e)	Add 6 to one third of the number z	

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4 **Translate into symbolic expression :**

(a) Add a number z to 36

(b) Five less than a number x

(c) Nine more than a number x

(d) Subtract a number t from 24

(e) Three times a number y

(f) Product of a number p and 7.5

(g) Quotient of a number h by q

(h) Nine divided by a number x

(i) Seventy nine multiplied by a number v

(j) Take away a number k from 18

(k) Seven increased by a number s

(l) A number w decreased by 5

(m) Difference of a number h and 15 , where h is greater than 15

(n) Three fifth a number n

(o) Divide the number x by 5 , and add 5 to the quotient.

5 **Translate into symbolic expression :**

(a) 🕮 Subtract 8 from a number

(b) 🕮 Add 5 to the three times of a number.

(c) 🕮 Add 4 to the half of a number.

(d) 🕮 Subtract 7 from one third of a number.

(e) 🕮 7 is added to the double of a number.

(f) 🕮 3 is subtracted from three times of a number.

(g) Twice the sum of a number and three.

(h) The difference of three times a number and one.

6 **Choose the correct answer :**

(a) 🕮 If we subtract 5 from the number x , we get

(5 x *or* 5 – x *or* x – 5 *or* x + 5)

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(b) 🕮 Suzan saved L.E. x and her father gave her L.E. 10
she will have
(x – 10 *or* x + 10 *or* 10 x *or* 10 – x)

(c) 🕮 Subtracting 3 from double of the number x = ...
(x – 3 *or* 2 x – 3 *or* 3 x + 2 *or* 5 x)

(d) The difference between three times a number and two is
(3 x + 2 *or* 3 x – 2 *or* 2 × 3 x *or* $\frac{3x}{2}$)

(e) If three times a number is added to 12 , then the expression that expresses this is
(x + 12 *or* x – 12 *or* 3 x + 12 *or* 3 x – 12)

(f) Twice the sum of a number and five is
(2 x + 5 *or* 2 x – 5 *or* 2 (x + 5) *or* 2 (x – 5))

(g) Bassem is x years old now , how old will he be after 5 years ?
(5 x *or* 5 ÷ x *or* x – 5 *or* x + 5)

(h) What operations are in the symbolic expression for "twice a number increased by three" ?
(+ and – *or* × and – *or* × and + *or* × , + and –)

7 **Write each symbolic expression in words :**

(a) n – 5 (b) $\frac{f}{3}$ (c) c + 15

(d) 9 – y (e) 8 x



Challenge

8 **Write a symbolic expression for each of the following :**

(a) The product of "three" and "four more than a number y"

(b) Five times the difference of a number x and six.

9 Bassem runs a mile in 12 minutes. Write a symbolic expression for the number of miles that Bassem runs in m minutes.

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Lesson 2 The constant and the variable

- A bookshop sells each copy of a certain book for L.E. 7
 According to this ,

- The price of 2 copies of this book = $7 \times \boxed{2}$ = L.E. 14
- The price of 3 copies of this book = $7 \times \boxed{3}$ = L.E. 21
- The price of 4 copies of this book = $7 \times \boxed{4}$ = L.E. 28



So , the price of x copies of this book = L.E. $(7 \times \boxed{x})$

From previous , we notice that

- The price of one book is constant , whereas the total price of books varies according to the number of books.

We can say that :

- If x represents the number of books and y represents the total price of books , then :

$\boxed{y = 7 \times x}$ or we write $\boxed{y = 7\,x}$

- The symbol x is called a variable. It expresses the number of sold books.
- The symbol y is called a variable. It expresses the total price of sold books , it depends on x
- The number 7 is called a constant. It expresses the price of one book.

Generally :

The relation $y = 7\,x$ relates the two variables x and y and is called a mathematical relation.

by this relation $y = 7\,x$, we can find the value of y by knowing the value of x as in the following table :

x	2	4	5	8	10
y	14	28	35	56	70

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Unit Two

- A restaurant sells a sandwich for L.E. 5 and adds L.E. 2 for delivering sandwiches to houses , it does not matter how many sandwiches.



According to this :

- The price of 1 sandwich after delivering = 5 + 2 = L.E. 7
- The price of 2 sandwich after delivering = 10 + 2 = L.E. 12
- The price of 3 sandwich after delivering = 15 + 2 = L.E. 17

We notice that :

The total price = a sandwich price x the number of sandwiches + delivery service.

We can write that :

$y = 5x + 2$ Where :

- x is a variable , it expresses the number of sandwiches.
- y is a variable , it expresses the total prices of sandwiches.
- 5 is a constant , it expresses the price of one sandwich.
- 2 is a constant , it expresses the price of delivery service.

From the previous mathematical relation , we can find the total price of any number of sandwiches including the delivery service , for example :

- If the number of sandwiches is 6 , *i.e.* x = 6
 , then : the total price (y) = $5 \times 6 + 2$ = L.E. 32
- If the number of sandwiches is 10 , *i.e.* x = 10
 , then : the total price (y) = $5 \times 10 + 2$ = L.E. 52

Example 1

The daily wage of a worker in one factory consists of :

- A constant part , equals L.E. 40
- L.E. 10 per each working hour done in overtime.



[a] Write a mathematical relation of the daily wage of this worker.

[b] ***Complete the following table :***

Number of overtime hours	1	3		
Total daily wage			60	80

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Solution

[a] $y = 40 + 10\,x$,

Where : • y is the total daily wage.

• x is the number of overtime hours.

• 40 is the constant part of the daily wage.

• 10 is the price of each working hour in the overtime.

[b]

Number of overtime hours (x)	1	3	2	4
Total daily wage (y)	50	70	60	80

Example 2

If sally is x years old now , use x to write a mathematical relation for each of the following :

[a] Sally's uncle's age (y) , if he is four times the age of Sally.

[b] Sally's brother's age (y) , if he is third the age of Sally.

[c] Karim's age (y) , Karim is older than Sally by 17 years.

Solution

[a] $y = 4\,x$ **[b]** $y = \frac{1}{3}\,x$ **[c]** $y = x + 17$

Try by yourself

Complete the following :

[a] The price of a pen is L.E. 2 , y is the total price of x pens , then the mathematical relation between x and y is : y = ...

[b] x and y are two numbers. The greater numbers is 5 more than the other. If the smaller is x , then y = ...

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Exercise 7

The constant and the variable



From the school book

1 Write down a mathematical relation between x and y for each of the following :

a If the number y is nine times the number x

b If the number y is five more than the number x

c If the number x is the quotient of the number y by 3

d If the number x is seven less than the number y

e If the number x is 9 more than the double of y

f If the number y is twice the sum of the number x and 8

2 Choose the correct answer :

a If the sum of two numbers x and y is 20 , then y = ...

($20 + x$ or $20 - x$ or $x - 20$ or $\frac{x}{20}$)

b If the product of two numbers x and y is 10 , then y = ...

($10\,x$ or $\frac{x}{10}$ or $\frac{10}{x}$ or $x + 10$)

c The sum of two numbers x and y is 15 , the smaller number is x , then y = ...

($15 - x$ or $x - 15$ or $x + 15$ or $15\,x$)

d The difference of two numbers is 7 , and the smaller number is y , then the greater number is ($7\,y$ or $7 - y$ or $y - 7$ or $y + 7$)

e x and y are two numbers. The greater number is 3 more than the other. If the smaller number is y , then x = ...

($3\,y$ or $y - 3$ or $y + 3$ or $\frac{1}{3}\,y$)

f If Ahmed has L.E. 25 , and what Esslam has is less than what Ahmed has by L.E. x , then Esslam has

($x + 25$ or $25\,x$ or $\frac{25}{x}$ or $25 - x$)

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Lesson Two

3 Complete the following :

(a) If the sum of two numbers is 30 and one of them is x , then the other = ...

(b) 🕮 The sum of what Manal and Nihal have is L.E. 10 If Manal has L.E. x , then Nihal will have L.E.

(c) The side length of an equilateral triangle is ℓ and its perimeter is p , then the mathematical relation between p and ℓ is : p = ...

(d) The perimeter of a square is p , and its side length is ℓ , then the mathematical relation between p and ℓ is : p = ...

(e) The side length of a rhombus is x and its perimeter is p , then the mathematical relation between p and x is : p = ...

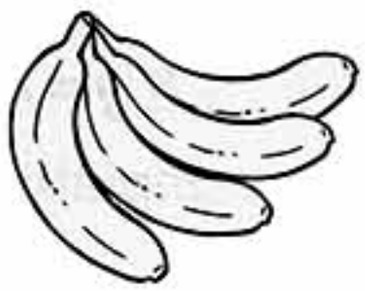
(f) 🕮 The perimeter of a rectangle is 20 cm. If its length is x cm. , then its width = ...

(g) If the area of a rectangle is A and whose length is x and width is 5 cm. then : A = ...

(h) 🕮 The lengths of two adjacent sides of a parallelogram are x and y , then its perimeter = ...

(i) 🕮 The length of a rectangle is 3 cm. more than its width. Let the length be ℓ cm. , then the width will be cm.

4 **If the price of 1 kg. of banana is L.E. 6 , the price of x k.g. of banana is y , then write a mathematical relation between x and y**



5 🕮 **Medhat bought x kg. of chocolate and put it in a box that costs L.E. 5 Calculate what Medhat should pay in terms of x if the price of 1 kg. of chocolate is L.E. 28**



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Unit Two

6 **The price of a meal in a restaurant is L.E. 25 , and L.E. 3 are added for delivery service , it does not matter , how many meals.**



If x is the number of meals Bassem order , and
y is the total price he has to pay , then write
a mathematical relation between x and y
Find the total price Bassem has to pay if he order 3 meals.

7 🕮 **The owner of a factory pays the daily wage of one of his workers according to the mathematical relation y = 12 + 5 X**

Where X represents number of working hours done in overtime and y represets the daily wage in L.E.



(a) Complete :

The constant daily wage = L.E.

The constant daily wage and overtime wage = L.E.

(b) Complete the following table that shows the mathematical relation of the daily wage according to the overtime hours :

Number of overtime hours (x)	0	1	2			5
Total daily wage (y)				27	32	

8 🕮 **If y = 4 x is the mathematical relation between x and y , then complete the table :**

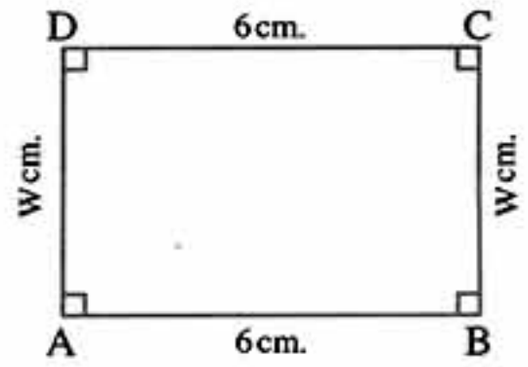
x	3	1	5			
y				24	16	28

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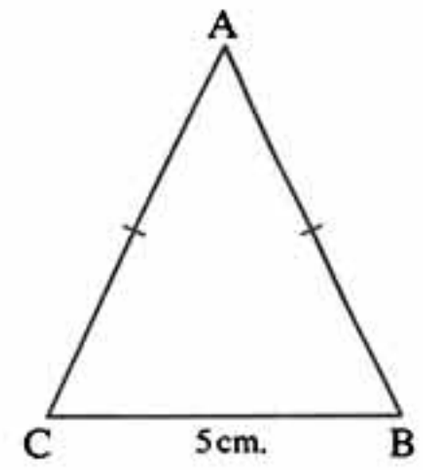


Lesson Two

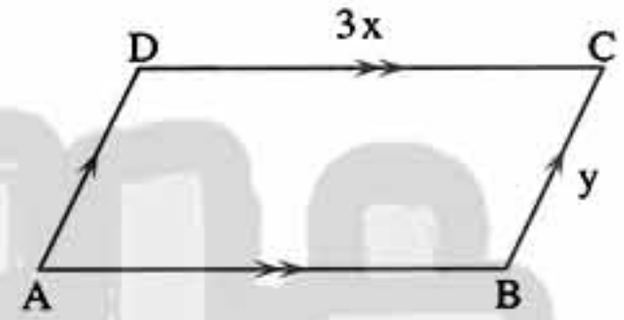
9 A rectangle whose length is 6 cm. and whose width is w cm. , if its perimeter is p , write a mathematical relation between p and w , then find p when w = 4 cm.



10 An isosceles triangle with base 5 cm.
Find the mathematical relation between the lengths of its sides and its perimeter
Let p represent the perimeter of the triangle ABC and ℓ represent the length of $\overline{AB}$



11 A parallelogram , the lengths of its two adjacent sides are 3 x and y , if its perimeter is p , write a mathematical relation between p , x and y , then find p if x = 2 and y = 3





Challenge

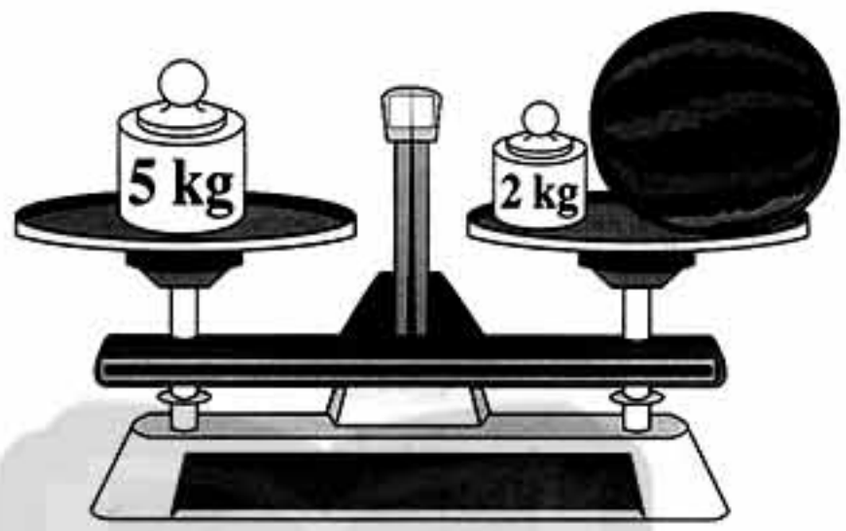
12 If you buy 5 pens for L.E. x each and 3 rulers for L.E. y each.
Find the total cost c in terms of x and y

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Unit Two

Lesson 3 Equations

- In front of you , there is a balanced scale.



- If we denote the weight of the watermelon by x kg. , then the amount of weights in the right pan = (x + 2) kg. and the amount of weights in the left pan = 5 kg.
- The scale is balanced , then : $x + 2 = 5$ and this mathematical relation is called an equation.
- ***Now , can you expect the weight of the watermelon ?***

 It's clear that : the weight of the watermelon must be 3 kg. to make the weights in the right pan = 5 kg. which is the same in the left pan.

 i.e. $x = 3$

Remarks

1. The relation $x + 2 = 5$ is called an equation. The symbol x is called the unknown or (the variable) in the equation.
2. The weight 3 kg. is the unique value that makes the two pans equal , therefore we can say that the number 3 is the solution of the equation.

Solving equations

Solving equation means finding the value of the unknown (symbol) included in the equation.

For example :

To solve the equation : $x + 6 = 8$, we have to look for a number if added to 6 , the sum is 8 this number must be 2 because $2 + 6 = 8$, therefore : $x = 2$

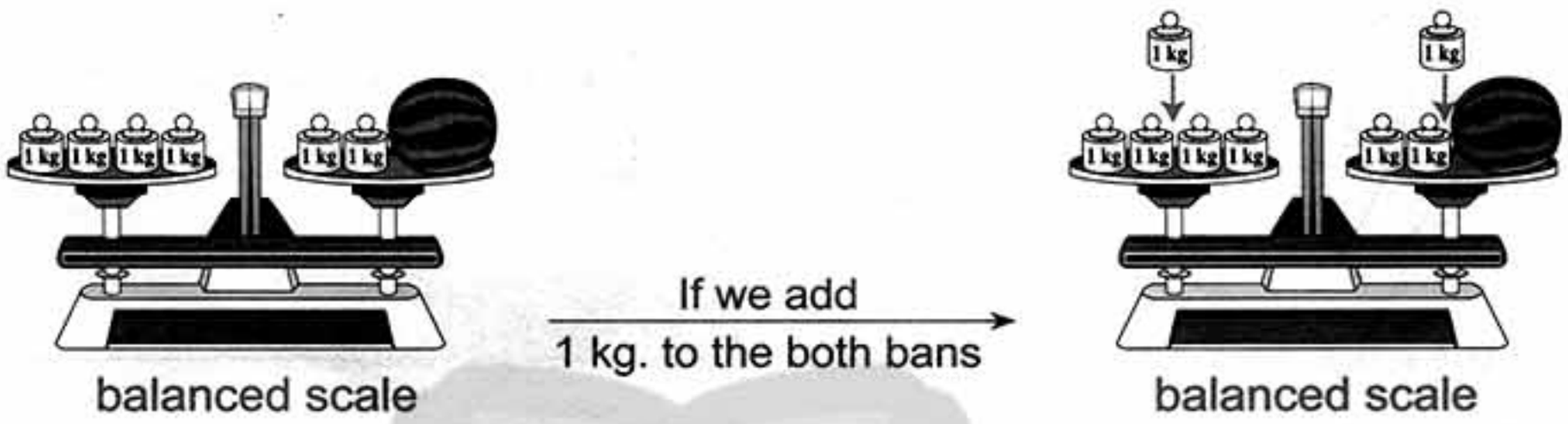
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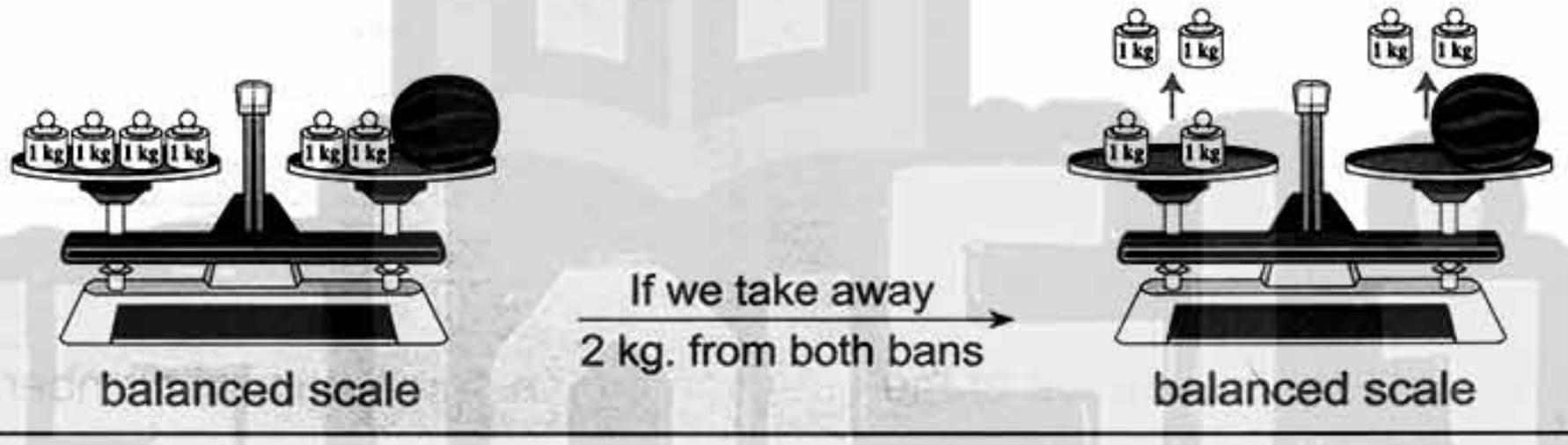
Lesson Three

Remark 1

[a] Adding equal amounts to both sides of the equation does not affect on the equality of the equation.



[b] Subtracting equal amounts from both sides of the equation does not affect on the equality of the equation.



From the previous remark , we can solve several equations as in the following example :

Example 1

Solve each of the following equations :

[a] $x - 3 = 5$ **[b]** $x + 2 = 4$

Solution

[a] $x - 3 = 5$ Add 3 to both sides as it does not affect the equality

$x - 3 + 3 = 5 + 3$

$x - 0 = 8$

$x = 8$

Check the answer : 8 – 3 = 5 ✓

Another method

You can do as the following :

$x \overset{-3}{} = 5 \overset{+3}{} \longrightarrow x = 5 + 3$

$x = 8$

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[b] x + 2 = 4 Subtract 2 from both sides

as it does not affect the equality

x + 2 – 2 = 4 – 2

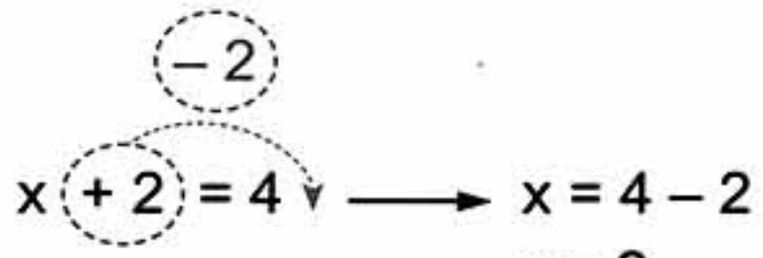
x + 0 = 2

x = 2

Check the answer : 2 + 2 = 4 ✓

Another method

You can do as the following :



Try by yourself

Solve each of the following equations :

[a] x – 5 = 2

.....

.....

.....

.....

[b] x + 1 = 5

.....

.....

.....

.....

Remark 2

[a] Multiplying both sides of the equation by the same natural number , does not affect on the equality of the equation.

[b] Dividing both sides of the equation by the same natural number not equal to zero , does not affect on the equality of the equation.

From the previous remark we can solve several equations as in the following example :

Example 2

Solve each of the following equations :

[a] 2 x = 8 **[b]** $\frac{1}{3}$ x = 6

Solution

[a] 2 x = 8 Divide both sides by 2

as it does not affect the equality.

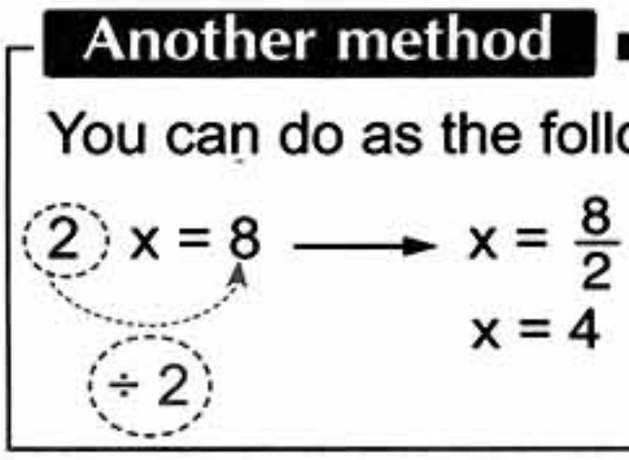
$\frac{2x}{2} = \frac{8}{2}$

x = 4

Check the answer : 2 × 4 = 8 ✓

Another method

You can do as the following :



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[b] $\frac{1}{3}$ x = 6 Multiply both sides by 3

as it does not affect the equality.

$\frac{1}{3}$ x × 3 = 6 × 3

x = 18

Another method

You can do as the following :

$\frac{1}{3}$ x = 6 ⟶ x = 6 x 3

x = 18

(3) ↑ (x 3)

Check the answer : $\frac{1}{3} \times 18 = 6$ ✓

Try by yourself

Solve each of the following equations :

[a] 3 x = 9

.....

.....

.....

.....

[b] $\frac{1}{4}$ x = 2

.....

.....

.....

.....

Example 3

Solve each of the following equations :

[a] 2 x + 8 = 14

[b] $\frac{1}{7}$ x – 3 = 2

Solution

[a] 2 x + 8 = 14 Subtract 8 from both sides

2 x + 8 – 8 = 14 – 8

2 x = 6 Divide both sides by 2

$\frac{2x}{2} = \frac{6}{2}$

x = 3

Check the answer : $2 \times 3 + 8 = 6 + 8 = 14$ ✓

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Unit Two

[b] $\frac{1}{7}x - 3 = 2$ Add 3 to both sides

$\frac{1}{7}x - 3 + 3 = 2 + 3$

$\frac{1}{7}x = 5$ Multiply both sides by 7

$\frac{1}{7} x \times 7 = 5 \times 7$

$x = 35$

Check the answer : $\frac{1}{7} \times 35 - 3 = 5 - 3 = 2$ ✓

Try by yourself

Solve each of the following equations :

[a] $5x + 3 = 18$

.....

.....

.....

.....

[b] $\frac{1}{3}x - 2 = 1$

.....

.....

.....

.....

Example 4

Solve the equation : $10 - x = 7$

Solution

$10 - x = 7$

We look for a number if we subtracted it from 10 the result is 7

This number must be 3 because $10 - 3 = 7$

i.e. $x = 3$

Try by yourself

Solve the equation : $8 - x = 2$

.....

.....

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Lesson Three

How to form an equation ?

- You can form an equation from word sentence as in the following table :

Word sentence	The equation
The difference of the number x and five is 10 where x is greater than five	$x - 5 = 10$
Nine is seven more than the number y	$y + 7 = 9$
Five times of a number b is 25	$5\ b = 25$
Seven is three less than twice the number a	$2\ a - 3 = 7$

Remark

Forming an equation from a word sentence helps us to solve some problems as in the following example :

Example 5

The product of a number x and 5 is 35 , find the number x

Solution

- Form the equation from the word sentence as follows :

$x \times 5 = 35$

- Solve the equation to find the value of x :

$x \times 5 = 35$ Divide both sides by 5

$\frac{5x}{5} = \frac{35}{5}$

$x = 7$

i.e. The number is 7

Try by yourself

Find the number if added to 5 the sum is 12

.....

.....

.....

.....

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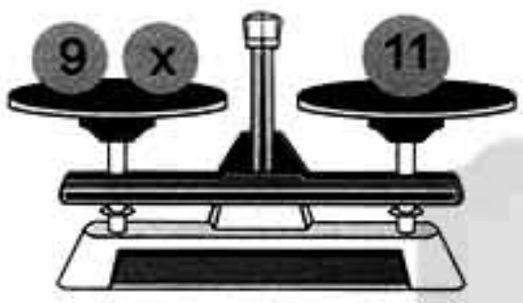
Unit Two

From the school book

Exercise 8 Equations

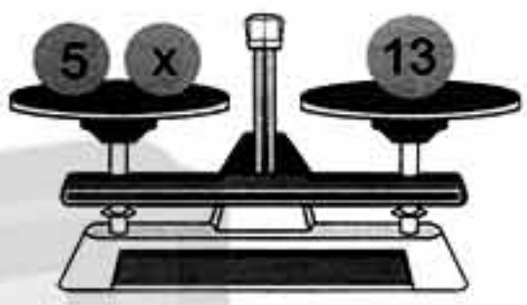
1 In each of the following figures , the two pans of the scale are balanced as in the first case :

(a)



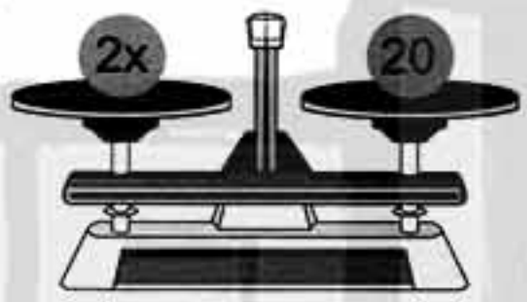
Equation : x + 9 = 11
Solution : x = 2

(b)



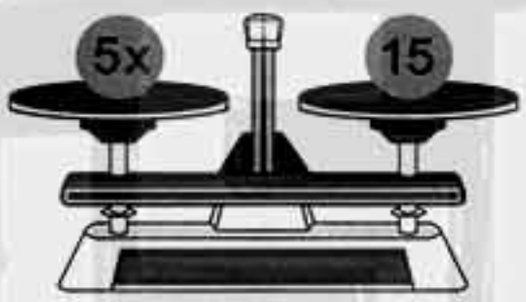
Equation :
Solution :

(c)



Equation :
Solution :

(d)



Equation :
Solution :

2 Solve each of the following equations :

(a) x + 3 = 12	(b) x + 8 = 15	(c) x – 7 = 25
(d) y – 5 = 7	(e) 8 + z = 8	(f) 9 + y = 44
(g) 3 x = 27	(h) 4 x = 16	(i) 37 y = 37
(j) 5 a = 0	(k) $\frac{1}{6}$ x = 12	(l) $\frac{1}{5}$ y = 1
(m) 70 = 50 + t	(n) 16 = n – 3	(o) 48 = 4 y

3 Solve each of the following equations :

(a) 2 x + 9 = 21	(b) 3 y – 5 = 7	(c) 3 x + 8 = 29
(d) 2 y – 12 = 2	(e) $\frac{1}{3}$ x + 8 = 10	(f) $\frac{1}{6}$ x – 3 = 2

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Lesson Three

4 Solve each of the following equations :

(a) 20 – x = 16 (b) 15 – y = 10

5 Underline the solution of each of the following equations :

(a) p + 4 = 18 , (4 , 22 , 14 , 72)

(b) 10 m = 90 , (9 , 100 , 10 , 90)

(c) k ÷ 6 = 6 , (36 , 12 , 6 , 0)

(d) x – 150 = 50 , (200 , 150 , 100 , 3)

(e) $\frac{y}{12} = 3$, (15 , 4 , 36 , 39)

(f) 4 x – 4 = 12 , (1 , 2 , 4 , 8)

(g) 3 y + 5 = 29 , (34 , 24 , 8 , 6)

6 Choose the correct answer :

(a) If x + 5 = 11 , then : x = ... (5 *or* 8 *or* 7 *or* 6)

(b) If 16 – y = 3 , then : y = ... (19 *or* 6 *or* 13 *or* 12)

(c) If z × 9 = 63 , then : z = ... (7 *or* 9 *or* 8 *or* 6)

(d) If k ÷ 8 = 7 , then : k = ... (15 *or* 1 *or* 56 *or* 8)

(e) If 25 ÷ p = 5 , then : p = ... (20 *or* 5 *or* 30 *or* 1)

(f) If 3 x + 1 = 19 , then : x = ... (18 *or* 12 *or* 8 *or* 6)

(g) If 2 y – 4 = 6 , then : y = ... (6 *or* 5 *or* 2 *or* 1)

(h) If 3 x = 12 , then : $\frac{1}{2}$ x = ... (9 *or* 6 *or* 4 *or* 2)

(i) If 6 y = 18 , then : 5 y = ... (3 *or* 5 *or* 15 *or* 30)

(j) If y ÷ 2 = 8 , then : $\frac{1}{4}$ y = ... (2 *or* 4 *or* 6 *or* 8)

7 Translate each verbal statement into an equation :

(a) The sum of the number x and 6 is 9

(b) A number if added to 17 the sum is 28

(c) If 9 is subtracted from a number , then the result is 23

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(d) Three times of a number is 12

(e) 📖 If 5 is subtracted from 3 times of a number , then the result is 16

(f) 10 is 8 more than twice the number x

(g) Bassem saved L.E. 15 , he bought 3 pens for L.E. x each , the remainder with him is L.E. 9

8 📖 Find the number which if added to 3 , the sum is 9

9 The product of a number x and 6 is 42 , find the number x

10 Wael saved L.E. 16 , he bought a notebook for L.E. x , the remainder with him is L.E. 10 , find the price of the notebook.

11 📖 **Write down a real life situation that represents each of the following equations :**

(a) $x + 7 = 29$ (b) $x - 5 = 19$ (c) $40 - y = 32$



Mental Math

12 📖 **Find the value of X in the following :**

(a) $22 + x = 9 + 22$

(b) $35 + x = 18 + 35$

(c) $7x = 117 \times 7$

(d) $12 \times (17 \times x) = (12 \times 17) \times 32$

(e) $3 \times 52 = (x \times 2) + (x \times 50)$

(f) $(7 \times 9) + (x \times 5) = 7 \times 14$

13 Solve each of the following equations :

(a) $24x = 61 \times 24$

(b) $6 \times 14 = 6 \times (x + 5)$

(c) $8 \times 45 = x\,(35 + 10)$

(d) $(x + 2) \times 7 = 7 \times 8$

(e) $573 = x + (7 \times 10) + (5 \times 100)$

(f) $482 = (4 \times x) + (8 \times 10) + 2$

(g) $42 = 2 + x \times 10$

(h) $x \times 7 + x \times 50 = 2 \times 57$

(i) $75 = 5x + 7 \times 10$

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Lesson Three



Challenge

14 Put the suitable signs + , – , ÷ or × so the equation has the given solution :

(a) The solution of the equation x 17 = 51 is 3

(b) The solution of the equation y 5 = 150 is 750

(c) The solution of the equation z 73 = 21 is 94

(d) The solution of the equation t 34 = 42 is 8

(e) The solution of the equation 35 m = 7 is 5

(f) The solution of the equation 67 p = 92 is 25

(g) The solution of the equation 76 t = 4 is 19

(h) The solution of the equation 315 u = 299 is 16

15 Observe and complete :

If ▲ + ◆ + ◆ = 120 and ▲ + ◆ = 75

, then ◆ = ... and ▲ = ...

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Unit Two

General exercise on unit two
From the school book

First Completion questions

Complete each of the following to get a correct statement :

1. If we add 3 to twice the number (x) , then we will get the number
2. If we add 5 to three times the number (y) , then we shall get the number
3. If we subtract 8 from twice the number (z) , then we shall get the number
4. If we divide the number (x) by 3 and add 3 to the quotient , then we shall get the number
5. If we multiply the number (L) by 5 , then we subtract from the result 6 , then we shall get the number
6. If $16 - x = 9$, then $x =$
7. If $4 + x = 18$, then $x =$
8. If $3x + 7 = 19$, $x \in \mathbb{N}$, then $x =$
9. If $(x + 2) \times 15 = 8 \times 15$, then $x =$
10. The length of a rectangle exceeds the width by 5 , if the width of the rectangle = x cm. , then its length = ... cm.
11. The width of a rectangle is x cm. , its length is longer than twice its width by 3 cm. , then the length of the rectangle is cm.
12. A rectangle in which the length is more than its width by 4 cm. If the length of the rectangle is x cm. , then its width = ... cm.
13. The perimeter of a rectangle is 16 cm. and its width = x , then length = ... cm.
14. The sum of two numbers is 35 , one of them is x , then the other is
15. The product of two numbers = 42 , one of them is x , then the other is
16. If $35 + (12 + x) = (35 + 12) + 19$, then $x =$
17. If $37 \times 15 = (7 + x) \times 15$, then $x =$
18. If $15 \times 34 = (5 + 10) \times x$, then $x =$

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Second Multiple-choice questions

Choose the correct answer from those given :

1. The difference between two numbers is 5 the smaller one is y , then the greater number is (5 y *or* 5 – y *or* y – 5 *or* y + 5)
2. If x + 8 = 15 , x ∈ ℕ , then x = ... (23 *or* 7 *or* 6 *or* 5)
3. If x – 3 = 5 , x ∈ ℕ , then x = ... (8 *or* 2 *or* 6 *or* 7)
4. x and y are two numbers where their sum is 20 , then y = ... (20 + x *or* 20 – x *or* x – 20 *or* $\frac{x}{20}$)
5. If we multiply the number x by 7 , then we subtract from the result 3 we shall get (7 x + 3 *or* 3 x + 7 *or* 7 x – 3 *or* x – 21)
6. The sum of the two numbers is 15 , the smaller number is x , then the greater number is (x + 15 *or* 15 x *or* 15 – x *or* x – 15)
7. If Mahmoud has L.E. 15 and what Abu Zeid has is less than what Mahmoud has by x pounds , then Abu Zeid has (x + 15 *or* 15 – x *or* 15 x *or* $\frac{15}{x}$)
8. If the side length of a rhombus is x , its perimeter is P , then the mathematic relation between x and P is P = ... (4 x *or* x + 4 *or* x – 4 *or* 4 – x)
9. If the side length of an equilateral triangle is L and its perimeter P , then the mathematic relation between P and L is P = ... (L + 3 *or* $\frac{1}{3}$ L *or* 3 L *or* L – 3)
10. Double the number x subtracted 7 from it equals (x – 7 *or* 2 x – 7 *or* 7 x + 2 *or* 14 x)

Third Essay questions

Solve each of the following equations :

1. 3 x + 8 = 29
2. 5 x – 7 = 33
3. $\frac{1}{3}$ x + 8 = 10
4. $\frac{1}{7}$ x – 3 = 2

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Unit Two

Technology on unit two

Using Excel program to solve the equation.

Example

Solve the equation : $3x + 2 = 11$

Solution

① Click "Start" button from the task bar.

② From the menu "All Programs" Select "Microsoft Office", then select "Microsoft Excel".

③ Write in any column (say B for example) the symbol x in the cell B1 then enter 1 in the cell B 2 and continue tell you reach the last cell as in fig. (1)

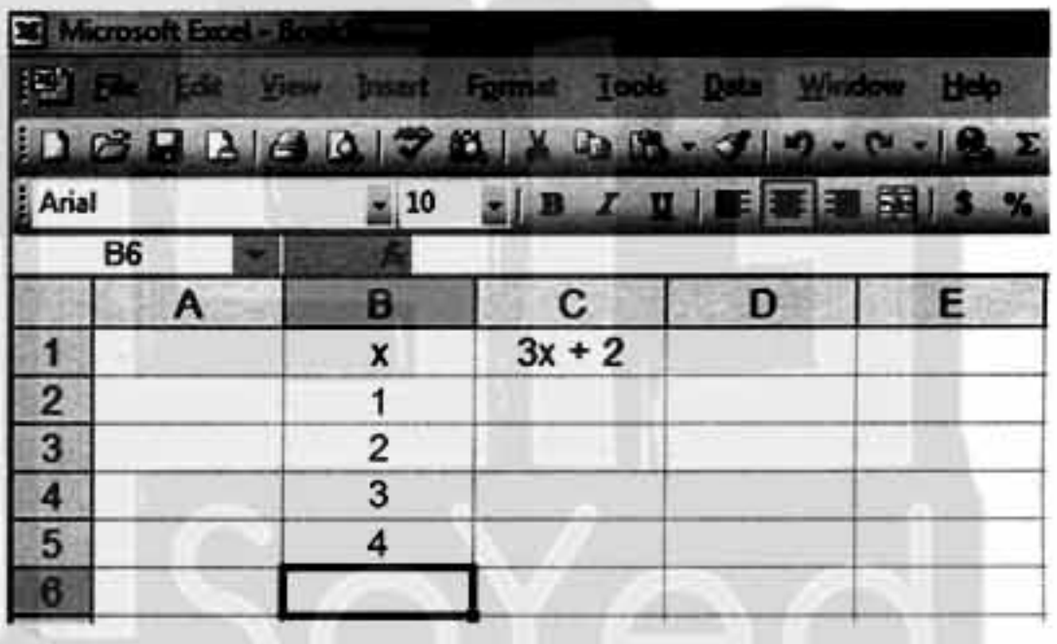


fig. (1)

④ Write 3 x + 2 in the cell C1 as in fig. (1)

⑤ Click cell C2 and type = 3* B2 + 2 and click enter to see the result 5 as in fig. (2)

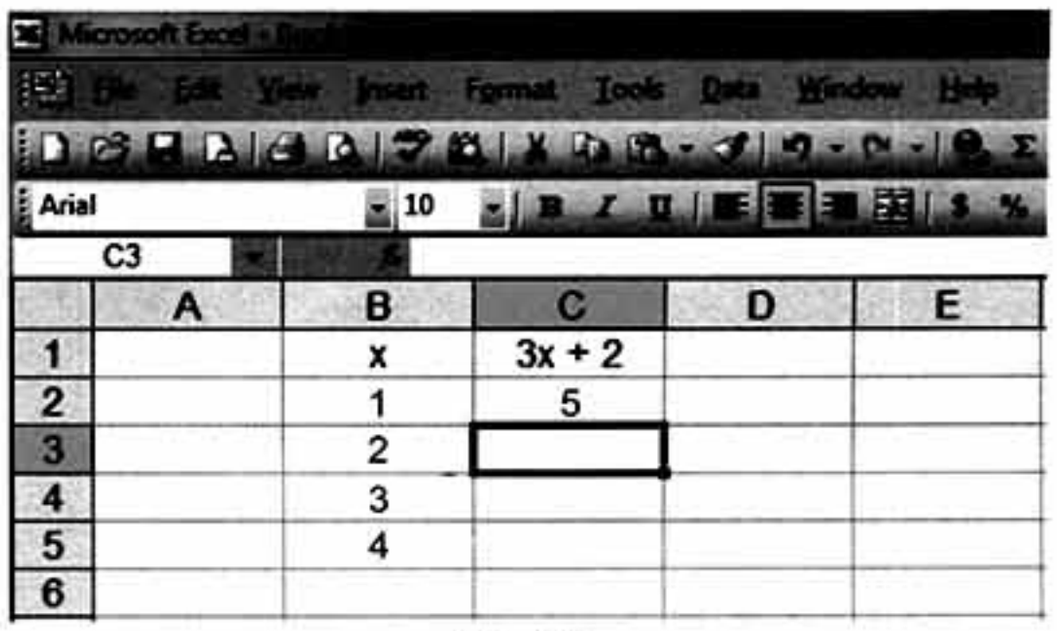


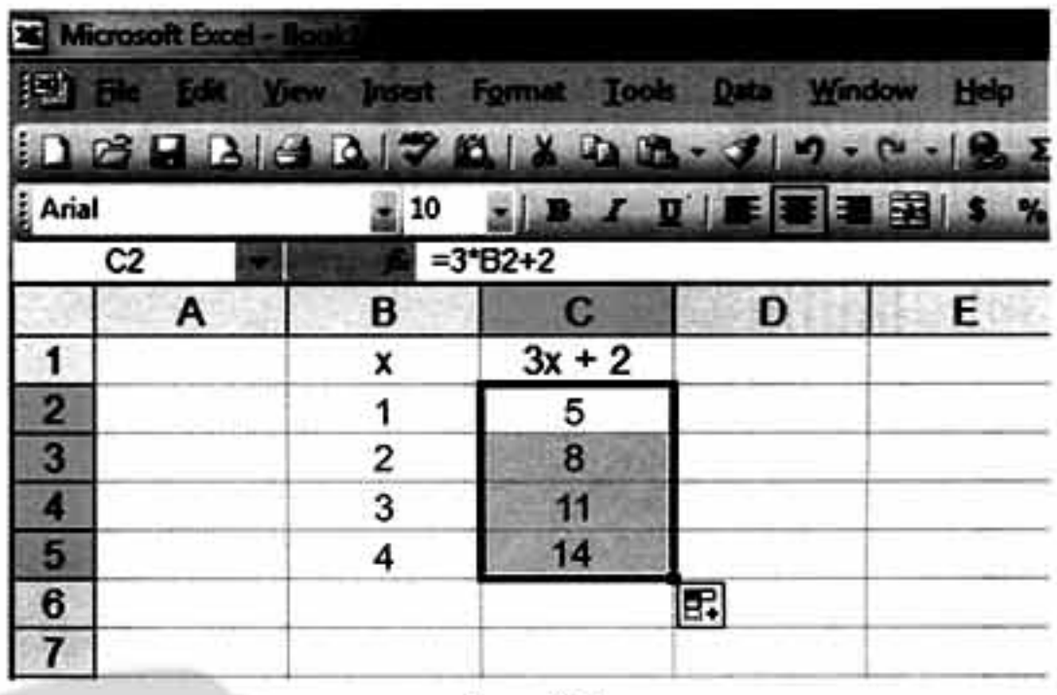
fig. (2)

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6 To repeat this operation on the remaining numbers , click cell C2 till the pointer changes to the form (+) , then perform (Auto fill) by copying the formula from cell C2 to C5 by dragging, then we obtain the shown figure Fig. (3).

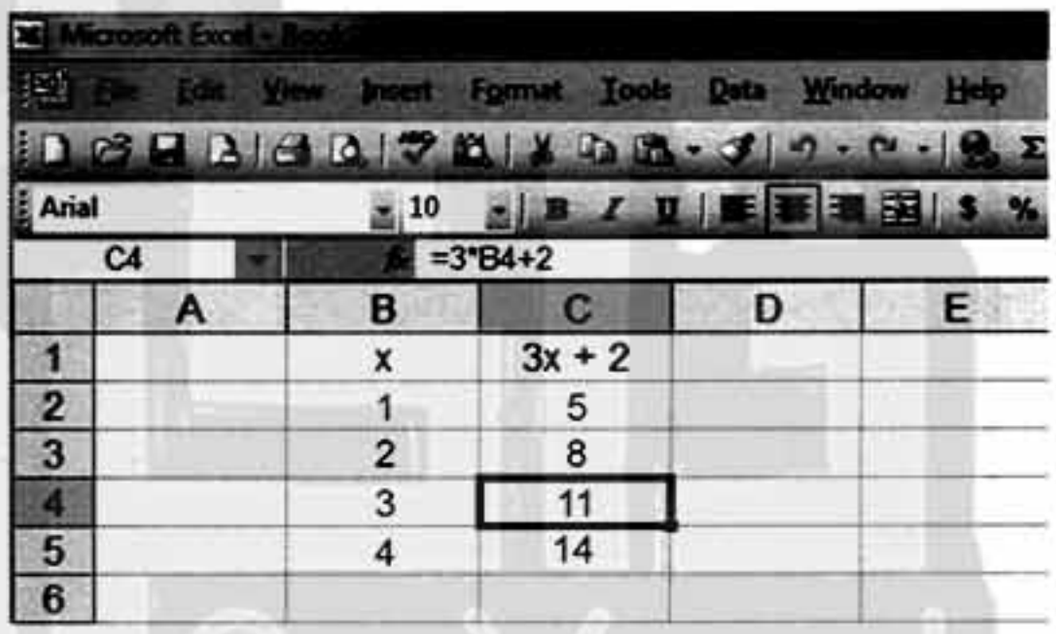


	A	B	C	D	E
1		x	3x + 2		
2		1	5		
3		2	8		
4		3	11		
5		4	14		
6					
7					

fig. (3)

7 From the data on the screen , it is clear that $x = 3$ satisfies the result 11 Fig. (4)

i.e. The solution of the equation $3x + 2 = 11$ is $x = 3$



	A	B	C	D	E
1		x	3x + 2		
2		1	5		
3		2	8		
4		3	11		
5		4	14		
6					

fig. (4)

Try by yourself

Use Excel program the solve the equation :

$$3(2x + 5) = 45$$

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Test on Unit Two



1 Choose the correct answer from the given ones :

(1) If $y = x + 5$, then the constant is (x or y or 5)

(2) If the side length of a square is m and its perimeter is P , then P = ...

($m + 4$ or $4\,m$ or $m - 4$ or $4 - m$)

(3) Subtracting 3 from double of the number k = ...

($k - 3$ or $2\,k - 3$ or $3\,k + 2$ or $5\,k$)

(4) If $3\,a = 15$, $a \in \mathbb{N}$, then a = ... (12 or 5 or $\frac{1}{5}$ or $\frac{1}{3}$)

(5) The difference between two numbers is 8 , the smaller one is y , then the greater number is ($8\,y$ or $8 - y$ or $y - 8$ or $y + 8$)

(6) If $x + 5 = 12$, $x \in \mathbb{N}$, then $x - 5$ = ... (7 or 5 or 2 or 12)

(7) If the sum of two numbers x and y is 10 , then y = ...

($10 + x$ or $10 - x$ or $x - 10$ or $\frac{x}{10}$)

(8) If $(6 \times 9) + (x \times 5) = 6 \times 14$, then x = ... (5 or 9 or 14 or 6)

2 Complete each of the following :

(9) If $7 \times 15 = 15 \times c$, $c \in \mathbb{N}$, then c = ...

(10) If we multiply the number f by 7 , then we subtract 2 from the result , then we get

(11) The perimeter of an equilateral triangle whose side length is L cm.

= cm.

(12) If $16 - x = 6$ where $x \in \mathbb{N}$, then x = ...

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3 Answer the following :

(13) Ahmed has L.E. x , Samir has L.E. 10 and the sum of what Samir has and the twice of what Ahmed has is L.E. 24

Write an equation to represent this situation and find the value of x

.....

.....

.....

(14) Solve each of the following equations where $x \in \mathbb{N}$:

(1) $x + 2 = 5$

.....

.....

.....

(2) $2x + 9 = 17$

.....

.....

.....

(3) $x - 4 = 6$

.....

.....

.....

(4) $\frac{1}{2} x - 5 = 3$

.....

.....

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Unit Three

Measurement

Lesson 1 : Area and its units - Areas of triangles.

Lesson 2 : Area of parallelogram.

Lesson 3 : Area of square in terms of its diagonal length.

Lesson 4 : Area of rhombus in terms of its diagonal lengths.

Lesson 5 : Circumference of a circle.

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A general exercise from the school book is given at the end of the unit.



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Lesson 1 Area and its units - Areas of triangles

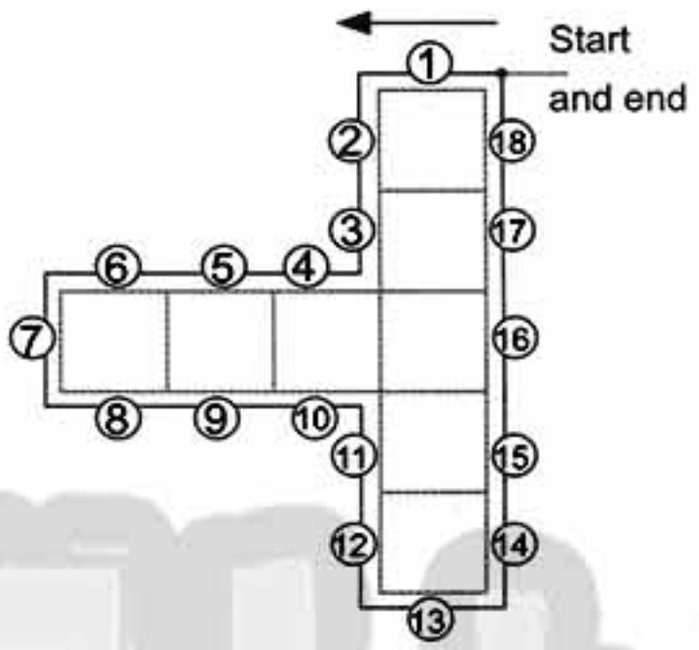
Area and its units

- **We have studied before that :**

The perimeter of any shape is the distance around it.

For example :

1. The perimeter of the opposite figure equals 18 units.



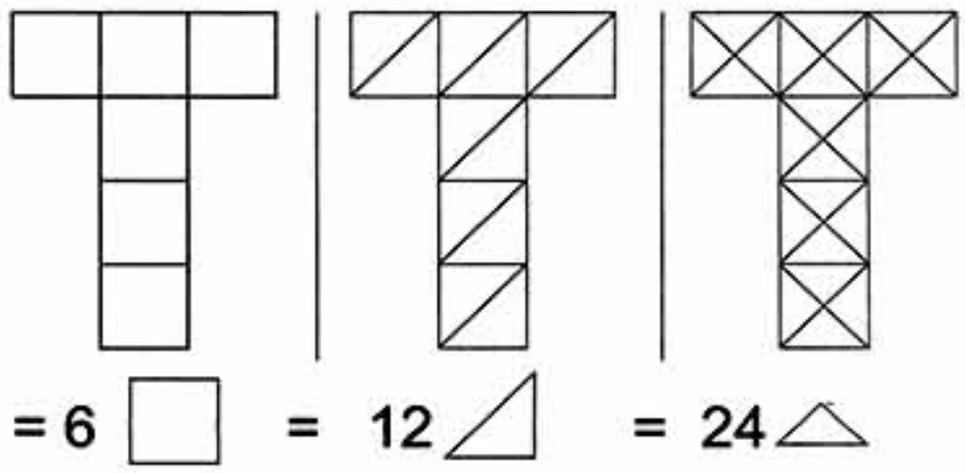
2. The perimeter of the opposite figure equals : 3 + 2 + 4 + 5 = 14 cm.



- **We have studied before that :**

The area of any surface is the number of units needed to cover a flat surface , and equals the sum of areas of the parts forming this surface.

For example :

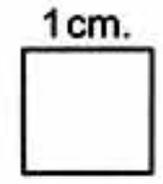


From previous example we notice that the area of a shape depends on the used unit. If this unit is changed , the area of the shape is changed as well.

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Unit Three

Remember the area measuring units



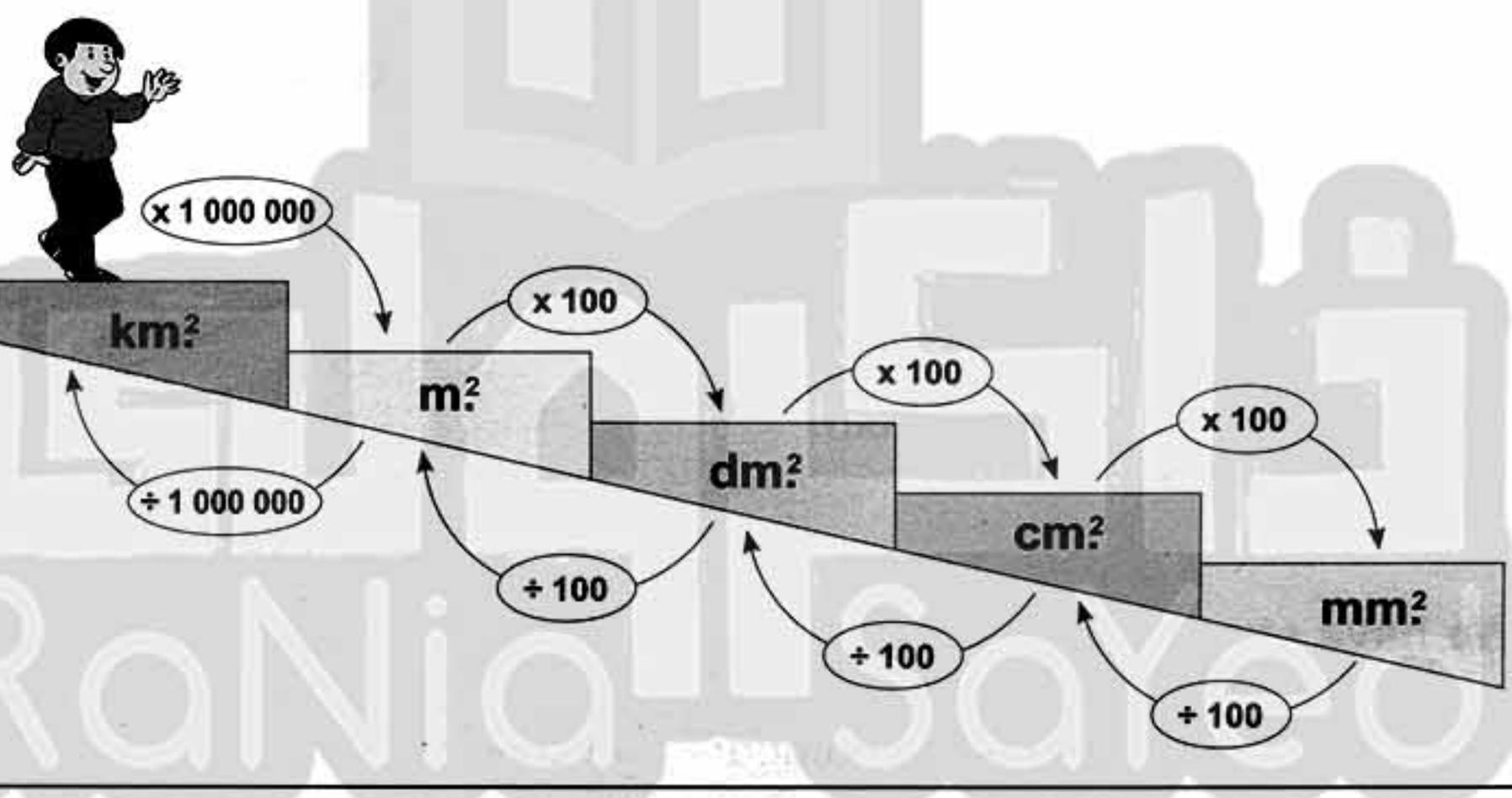
- 1 square centimeter (1 $cm.^2$)

 It is the area of a square whose side length is 1 cm.

- 1 square decimeter (1 dm^2) = 10 cm. × 10 cm. = 100 cm^2
- 1 square meter (1 m^2) = 10 dm. × 10 dm. = 100 dm^2

 = 100 cm. × 100 cm. = 10 000 cm^2
- 1 square kilometer = 1 000 m. × 1 000 m. = 1 000 000 m^2

Notice that :



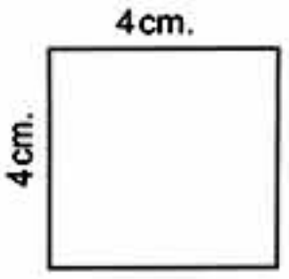
Remark :

Congruent shapes have the same area but the converse is not always true.

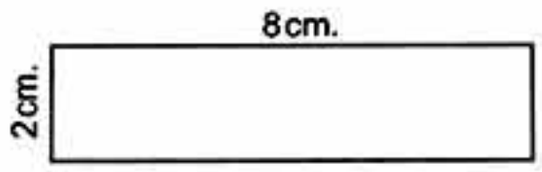
For example :

In the opposite two figures :

The square and the rectangle have the same area but they are not congruent.



its area is 16 cm^2.



its area is 16 cm^2.

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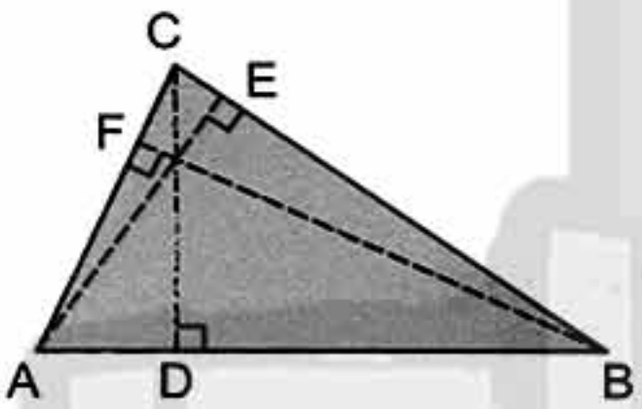
Lesson One

Areas of triangles

Prelude :

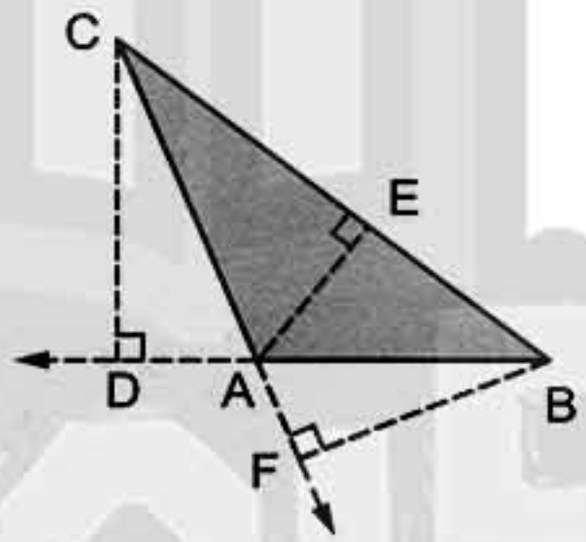
- We know that : any triangle has 3 sides.
- Any side of a triangle can be considered a base of the triangle.
 i.e. any triangle has 3 bases.
- Each base of the triangle has a corresponding height as in the following figures :

Acute-angled triangle



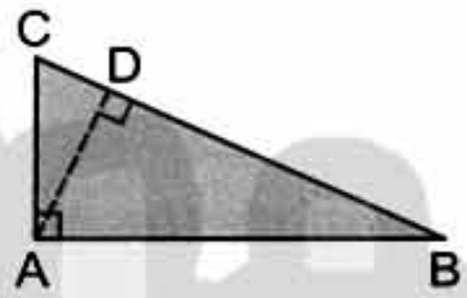
The base	corresponding height
$\overline{AB}$	CD
$\overline{BC}$	AE
$\overline{CA}$	BF

Obtuse-angled triangle



The base	corresponding height
$\overline{AB}$	CD
$\overline{BC}$	AE
$\overline{CA}$	BF

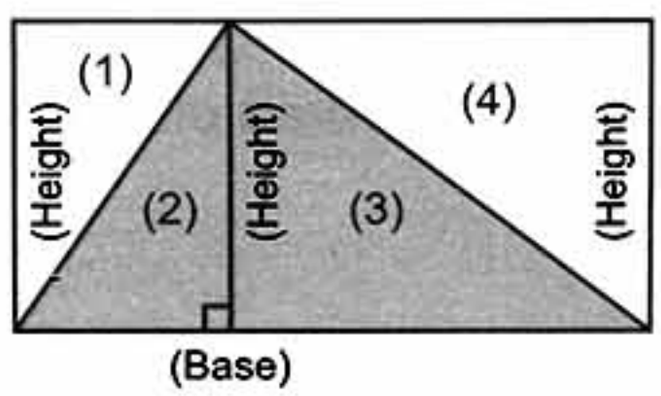
Right-angled triangle



The base	corresponding height
$\overline{AB}$	CA
$\overline{BC}$	AD
$\overline{CA}$	BA

Area of a triangle :

- ***From the opposite figure, we notice that :***
 The two triangles (1) and (2) are congruent and the two triangles (3) and (4) are congruent, then the area of the shaded triangle = the area of the unshaded triangles



$$= \frac{1}{2} \text{ the area of the rectangle}$$

$$= \frac{1}{2} \times \text{the base length} \times \text{the height}$$

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i.e. The area of the triangle $= \frac{1}{2} \times$ the base length $\times$ the corresponding height

$$A = \frac{1}{2} \times b \times h$$

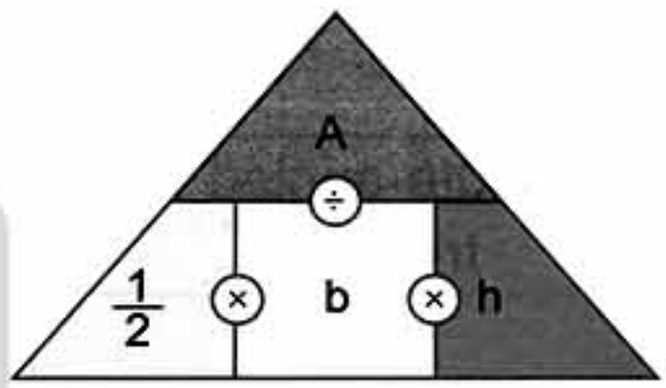
Notice that :

Using the opposite diagram , we note that :

[1] $A = \frac{1}{2} \times b \times h$

[2] $h = \frac{A}{\frac{1}{2} \times b}$

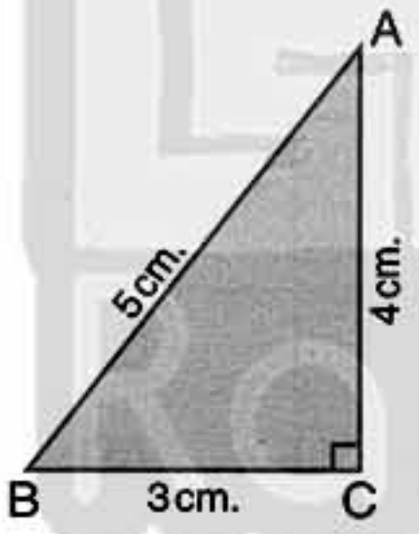
[3] $b = \frac{A}{\frac{1}{2} \times h}$



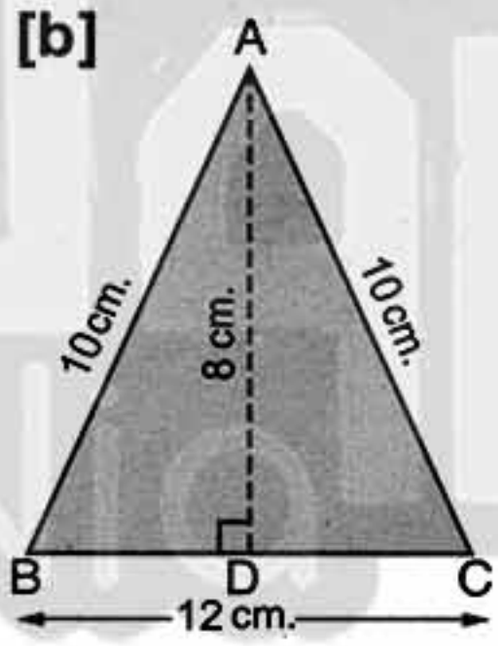
Example 1

Calculate the area of Δ ABC in each of the following :

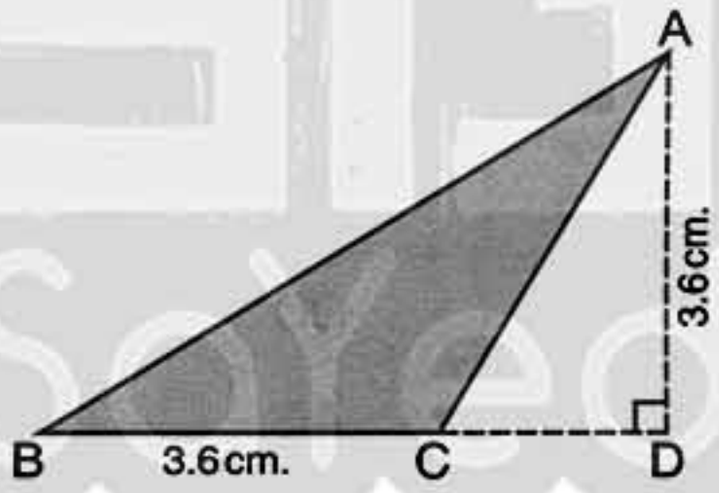
[a]



[b]



[c]



Solution

[a] The area of the triangle ABC $= \frac{1}{2} \times b \times h$

$= \frac{1}{2} \times BC \times AC = \frac{1}{1} \times 3 \times \cancel{4}^{2} = 6 \text{ cm}^2$

[b] The area of the triangle ABC $= \frac{1}{2} \times BC \times AD$

$= \frac{1}{1} \times \cancel{12}^{6} \times 8 = 48 \text{ cm}^2$

[c] The area of the triangle ABC $= \frac{1}{2} \times BC \times AD$

$= \frac{1}{2} \times 3.6 \times 3.6 = 6.48 \text{ cm}^2$

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Lesson One

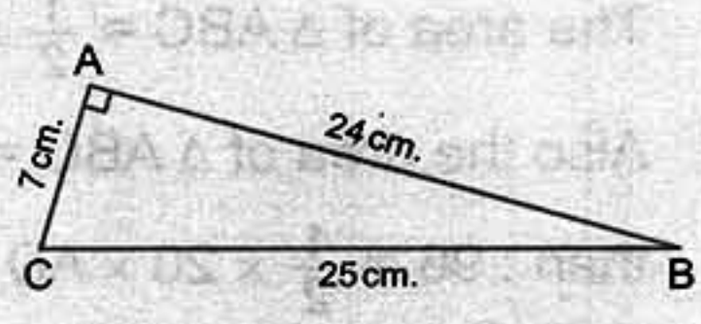
Try by yourself

Find the area of the opposite triangle :

.....

.....

.....



Example 2

If the area of a triangle is 72 cm.^{2} find :

[a] Its height , if its corresponding base length is 6 cm.

[b] Its base length , if its corresponding height is 9 cm.

Solution

[a] $h = \frac{A}{\frac{1}{2} \times b} = \frac{72}{\frac{1}{2} \times 6} = \frac{72}{3} = 24$ cm.

[b] $b = \frac{A}{\frac{1}{2} \times h} = \frac{72}{\frac{1}{2} \times 9} = \frac{72}{4.5} = 16$ cm.

Try by yourself

Complete the following table :

The height of a triangle	It corresponding base length	The area of the triangle
4	10	
6		15
.....	7	28

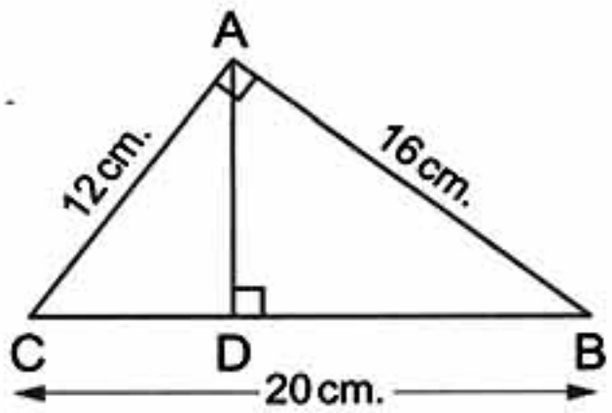
Example 3

In the opposite figure :

ABC is a right-angled triangle at A , $\overline{AD} \perp \overline{BC}$

If AC = 12 cm. , AB = 16 cm.

and BC = 20 cm. Find the length of $\overline{AD}$



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Solution

The area of Δ ABC = $\frac{1}{2} \times AB \times AC = \frac{1}{1\cancel{2}} \times \cancel{16}^{8} \times 12 = 96$ cm.

Also the area of Δ ABC = $\frac{1}{2} \times CB \times AD$

then : $96 = \frac{1}{2} \times 20 \times AD$ i.e $96 = 10 \times AD$

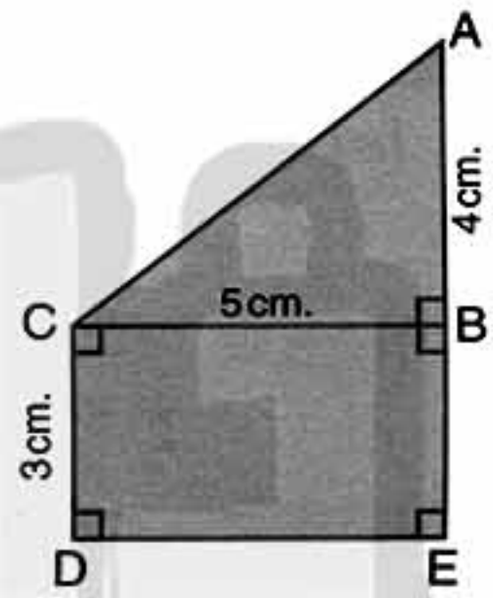
Therefore AD : $\frac{96}{10} = 9.6$ cm.

Remember that :

- The area of the square = Side length × side length
- The area of the rectangle = Length × width

Example 4

Calculate the area of the opposite figure :



Solution

The figure is formed from the right-angled triangle ABC and the rectangle CDEB

So,

The area of the triangle ABC = $\frac{1}{2} \times BC \times AB = \frac{1}{2} \times 5 \times 4 = 10$ cm.^{2}

and the area of the rectangle CDEB = L × W = 5 × 3 = 15 cm.^{2}

So,

The area of the figure = the area of the triangle + the area of the rectangle

= 10 + 15 = 25 cm.^{2}

Example 5

Which area is greater ?

A triangular piece of land with base length 12 m. and height 3 m. or a square shaped garden with side length 600 cm. ?

Solution

The area of the triangle = $\frac{1}{2} \times b \times h$

= $\frac{1}{2} \times 12 \times 3 = 6 \times 3 = 18$ m^2

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and

The area of the square $= L \times L$

$= 600 \times 600 = 360\,000\ cm^2 = \frac{360\,000}{10\,000} = 36\ m^2$

So,

The area of the square is greater than the area of the triangle.

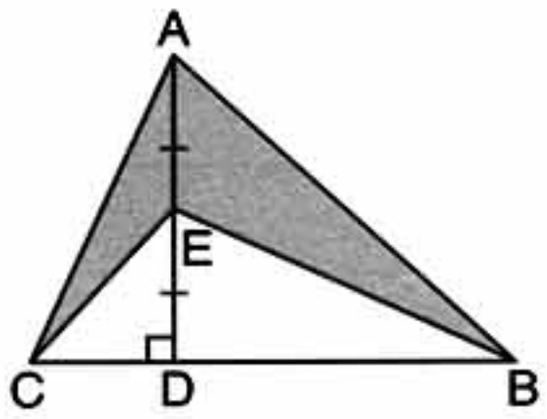
Example 6

In the opposite figure :

ABC is a triangle in which $\overline{AD} \perp \overline{BC}$, BC = 10 cm. and AD = 6 cm.

and E is the midpoint of $\overline{AD}$

Find the area of the shaded part.



Solution

The area of $\Delta ABC = \frac{1}{2} \times BC \times AD = \frac{1}{2} \times 10 \times 6 = 30\ cm^2$

, the area of $\Delta EBC = \frac{1}{2} \times BC \times ED = \frac{1}{2} \times 10 \times 3 = 15\ cm^2$

So,

The area of the shaded part = the area of ΔABC – the area of ΔEBC

$= 30 - 15 = 15\ cm^2$

Try by yourself

In the opposite figure :

ABCD is a square of side length 10 cm.

Find the area of the shaded part.

.....

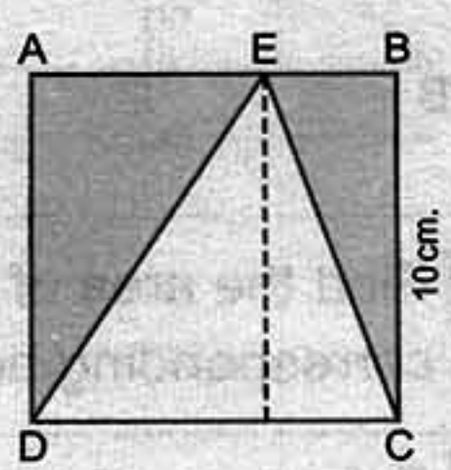
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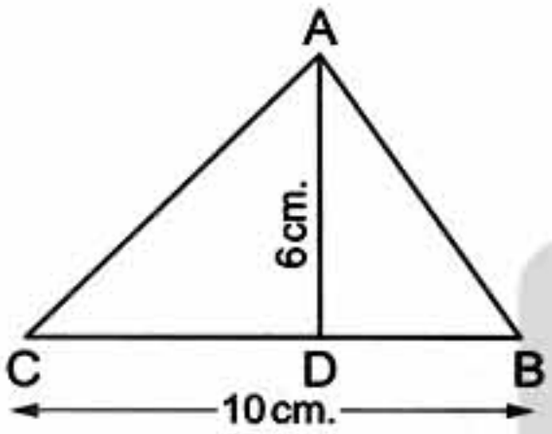
Unit Three

From the school book

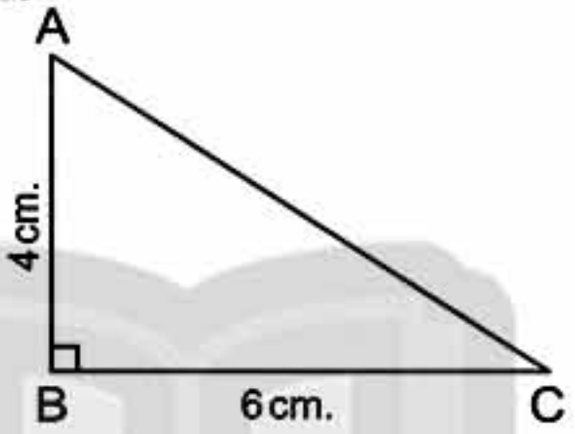
Exercise 1 Area and its units - Areas of triangles

1 Find the area of Δ ABC in each the following triangles:

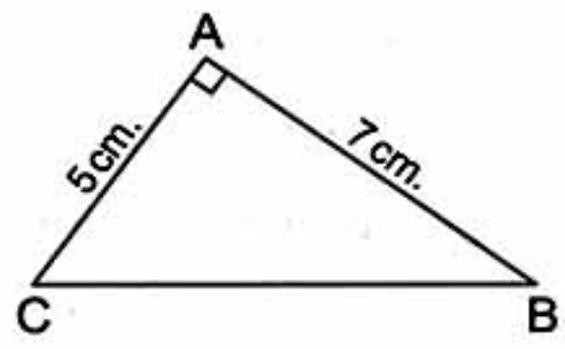
(a) 📖



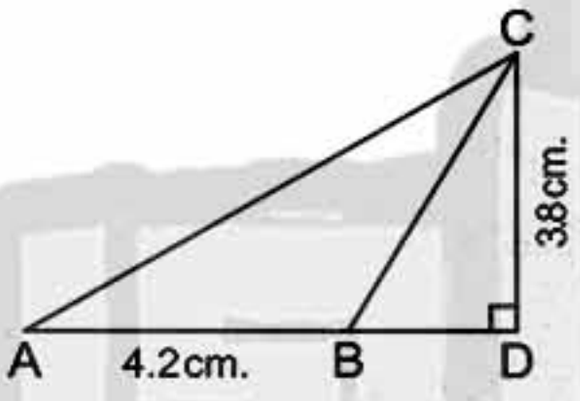
(b)



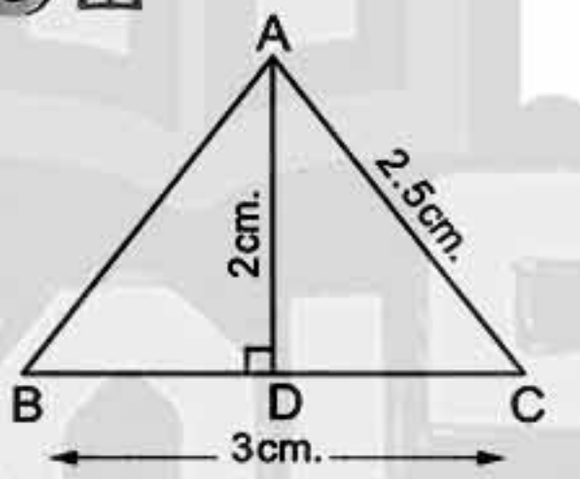
(c)



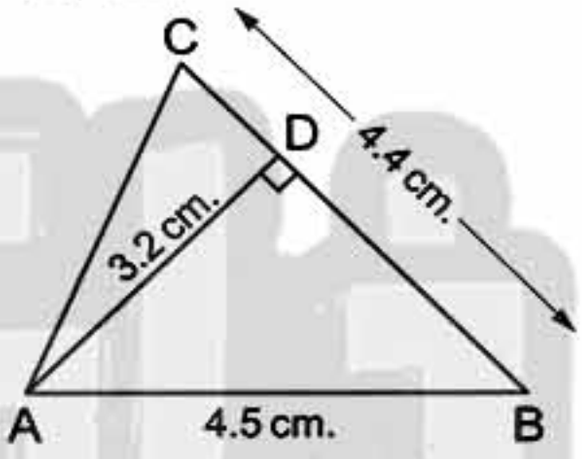
(d) 📖



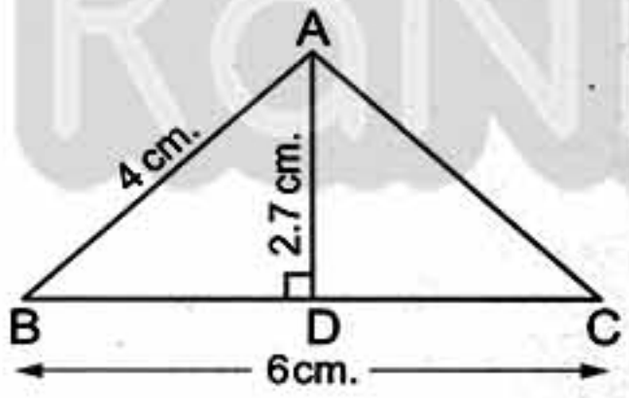
(e) 📖



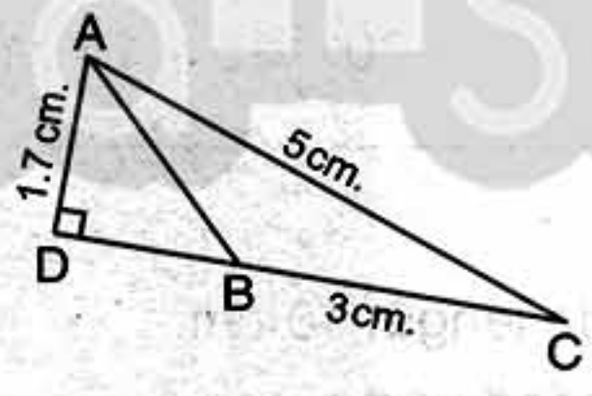
(f) 📖



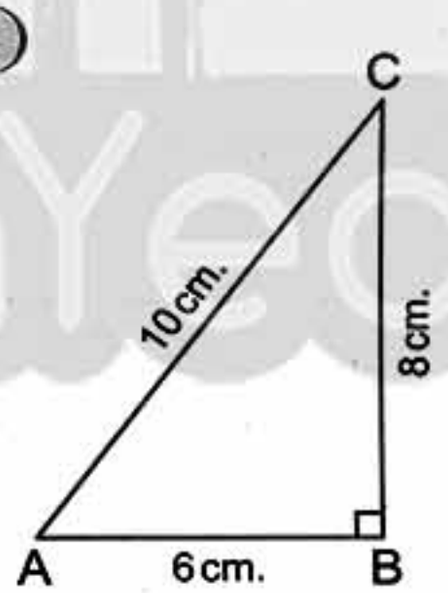
(g)



(h)



(i)



2 Find the area of a triangle whose base length = 4.2 m. and its corresponding height = 5.5 m.

3 If the area of a triangle is 60 cm^2 and the base length is 7.5 cm. , calculate its corresponding height.

4 The area of a triangle is 180 cm^2 , and the height is 45 cm. Find its corresponding base length.

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Lesson One

5 Complete the table :

Base length of Δ in (cm.)	Height of Δ in (cm.)	Area of Δ in (cm^2)
12	9	
10		25
.....	8.2	24.6

6 Complete :

(a) The area of a triangle = $\frac{1}{2}$ × ×

(b) If the length of the base = 6 cm. and the corresponding height = 4 cm., then the area of this triangle = ... cm^2

(c) If the area of a triangle is 30 cm^2 and its base length is 6 cm. , then its corresponding height = ... cm.

(d) If the area of a triangle is 120 cm^2 and its height = 1.2 dm. , then its corresponding base length = ... cm.

(e) If ABC is a right-angled triangle at B, and BC = 10 cm., AB = 8 cm., then its area = ... cm^2

(f) If the perimeter of an equilateral triangle is 18 cm., and its area is 15 cm^2 , then its height is cm.

(g) If the perimeter of an equilateral triangle is 27 cm. and its height is 7.8 cm. , then its area is cm^2

7 A triangle is of base length 12 cm. and its corresponding height is 4 cm. less than its base length. Find the area of this triangle.

8 The base of a triangle is 14 cm. long and its corresponding height is $\frac{3}{7}$ of its base length. Find the area of the triangle.

9 If the area of a triangle is equal to the area of a square of side length 7 cm. Calculate the height of the triangle if its corresponding base length is 14 cm.

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Unit Three

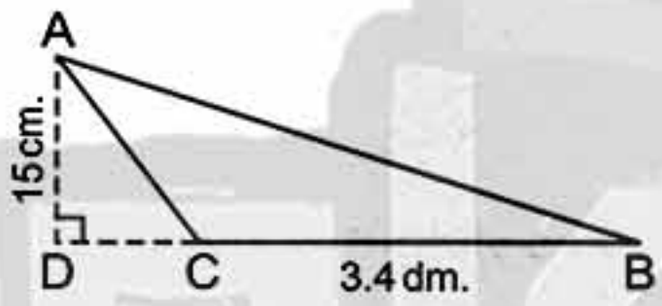
10 Which is larger in area, a piece of land in the shape of a triangle with base length 10 m. and its corresponding height 3 m. or a garden in the shape of a square with side length 5 m. ?

11 Which is larger in area, a garden in the shape of a triangle with base length 8 m. and its corresponding height 7 m. or a land in the shape of a rectangle with length 8 m. and width 3 m. ?

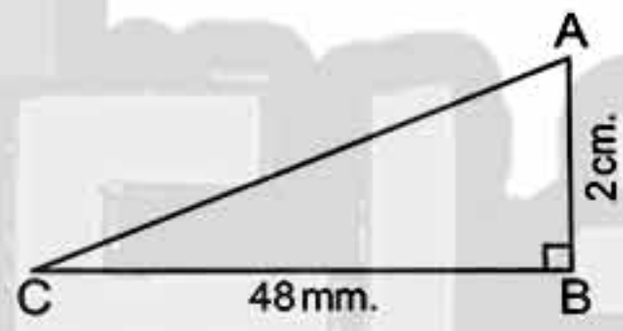
12 🕮 Which area is greater : a triangle with base length = 3.25 dm. and its corresponding height = 4 dm. or a rectangle with dimensions of 26 cm. and 20 cm. ? Find the difference in cm^2.

13 🕮 Find the area of Δ ABC in each of the following :

(a)

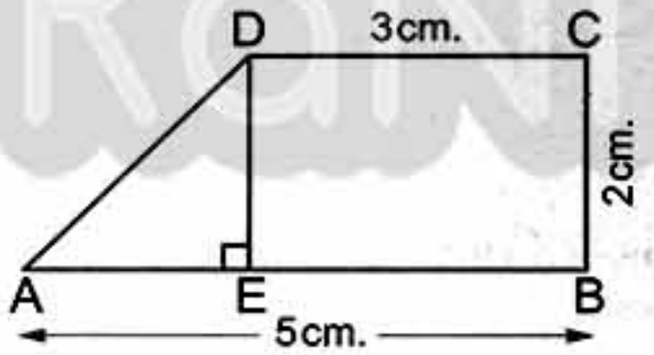


(b)

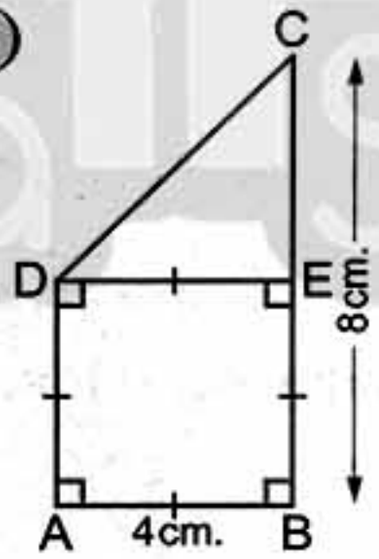


14 Find the area of each of the following figures :

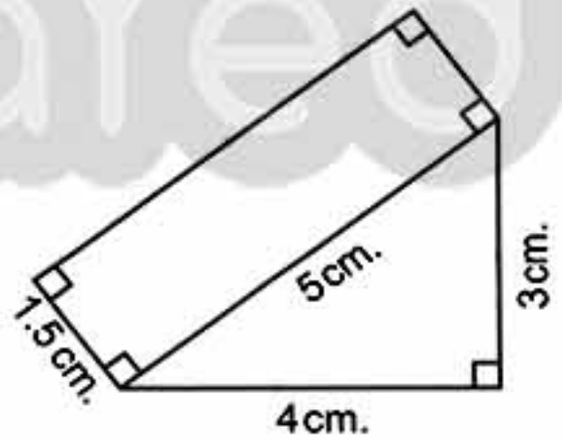
(a)



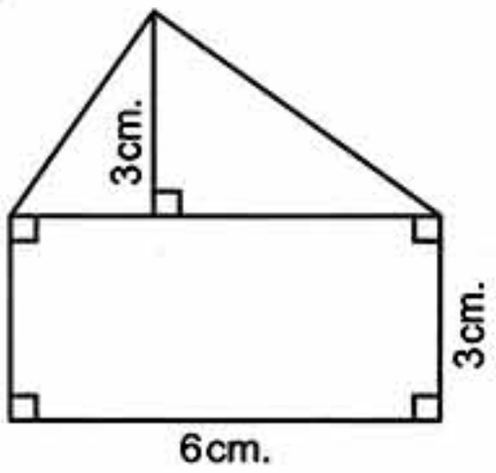
(b)



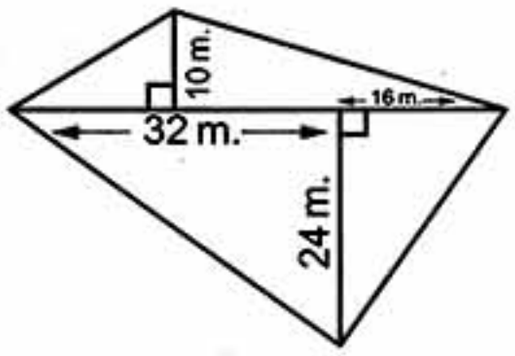
(c)



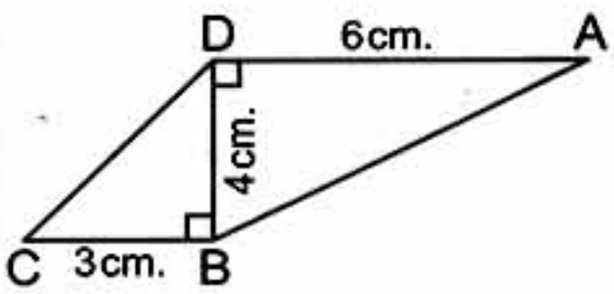
(d)



(e)



(f)

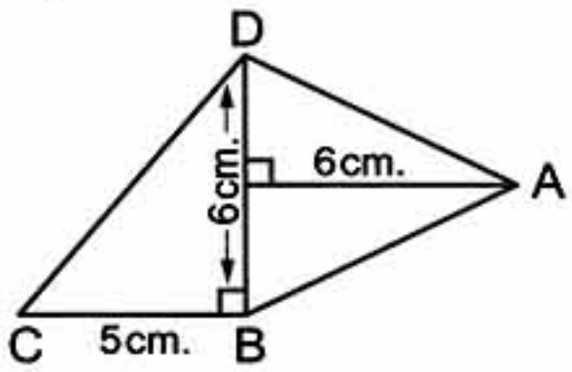


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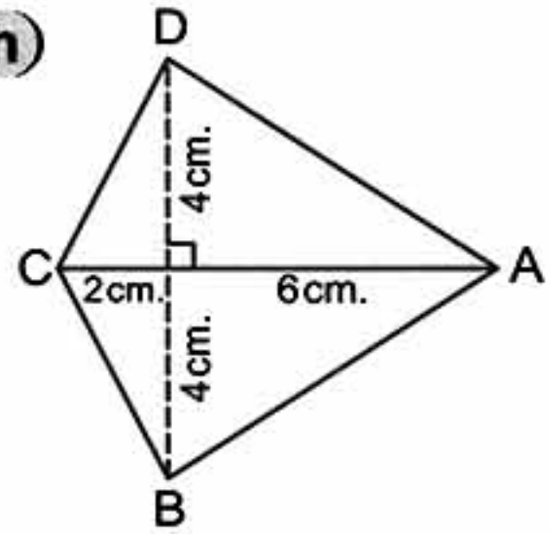


Lesson One

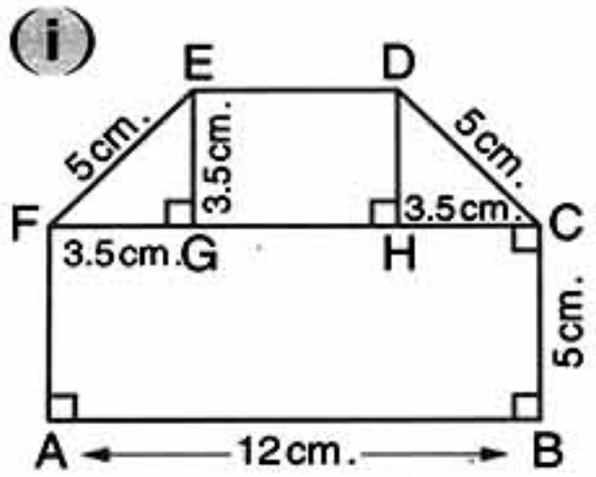
(g)



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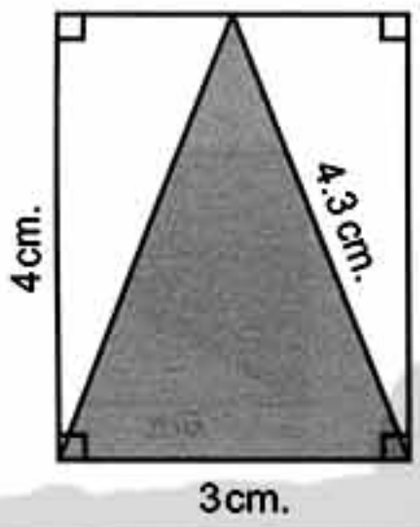


(i)

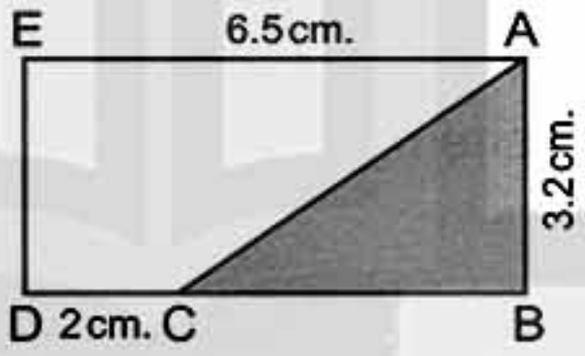


15 **Find the area of the shaded part of each of the following :**

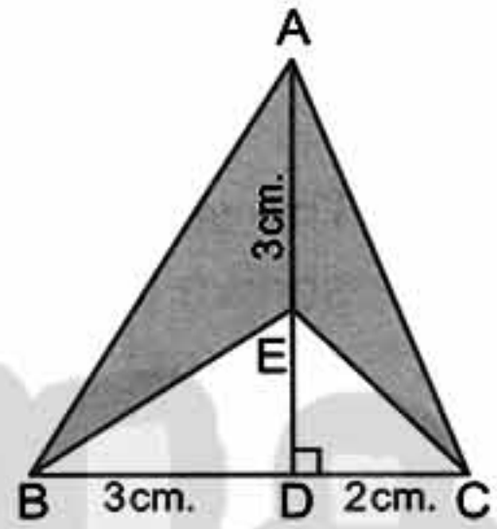
(a)



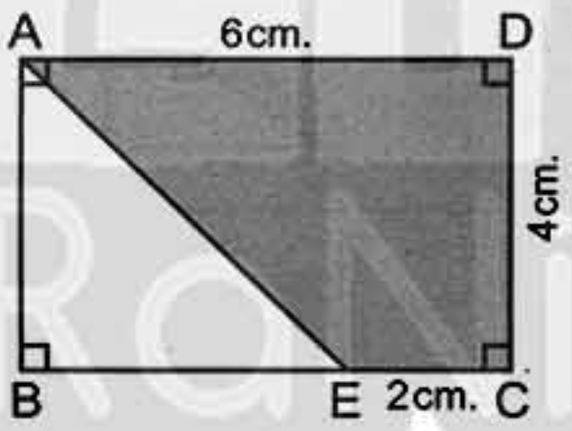
(b) 🕮



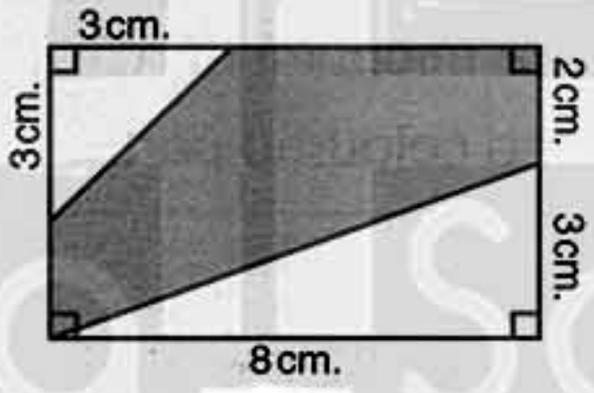
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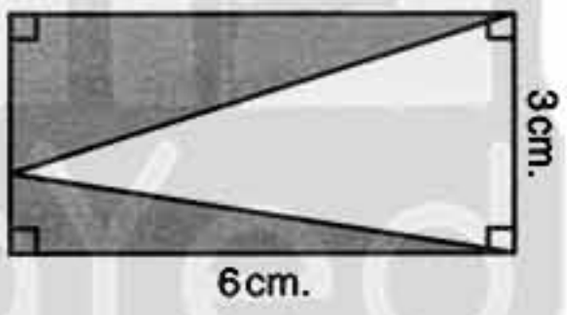
(d)



(e)



(f)



16 **Complete :**

(a) 🕮 **In the opposite figure :**

The shaded area = ... cm^2

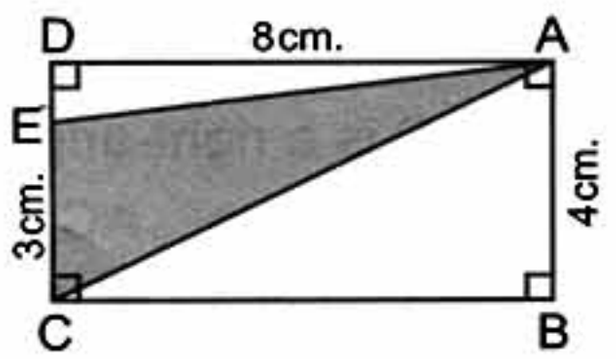


(b) **In the opposite figure :**

If AB = 4 cm.

, AD = 8 cm. and CE = 3 cm.

, then the shaded area = ... cm^2

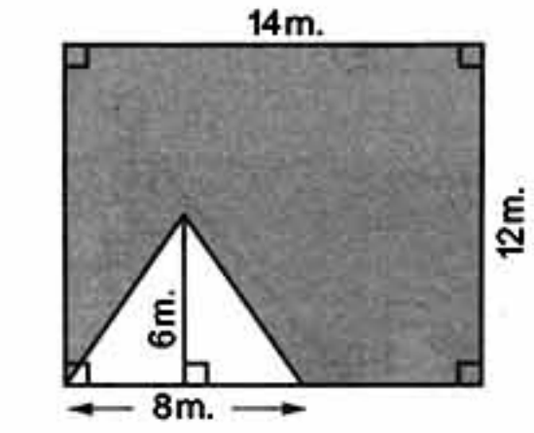


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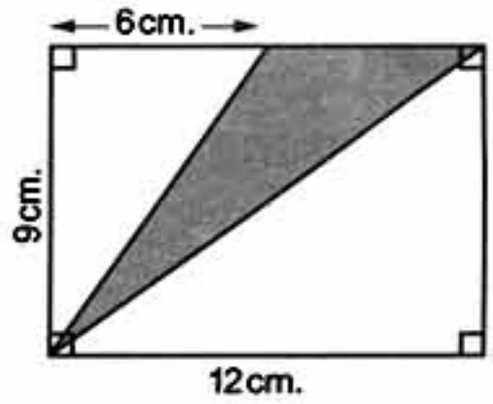
Unit Three

(c) In the opposite figure :

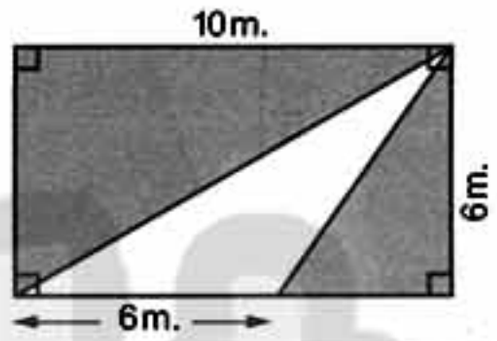
The shaded area = ... m^2



(d) The area of the coloured triangle shown in the opposite figure = ... cm^2



(e) The shaded area in the rectangle shown in the opposite figure is m^2

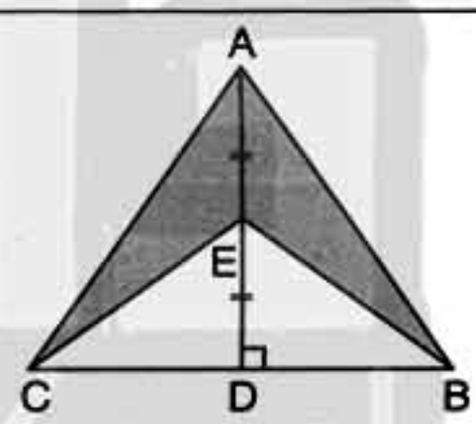


17 In the opposite figure :

$\overline{AD} \perp \overline{BC}$, BC = 4 cm.

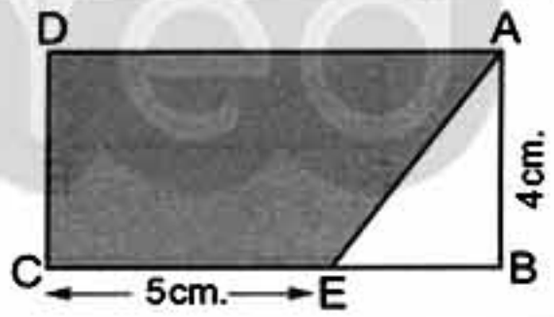
AD = 3 cm. and E is the midpoint of $\overline{AD}$

Calculate the area of the coloured part.



18 In the opposite figure :

ABCD is a rectangle of area 32 cm^2 and EC = 5 cm. Calculate the area of AECD

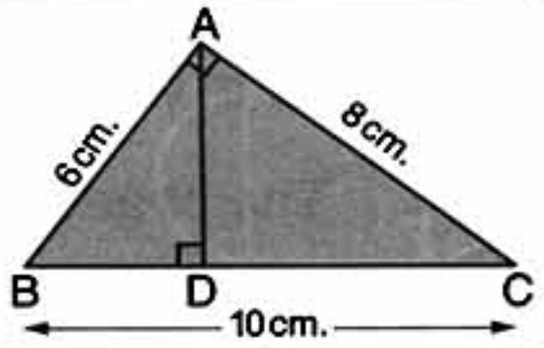


19 🕮 In the opposite figure :

ABC is a right-angled triangle at A

, $\overline{AD} \perp \overline{BC}$,

Find the area of Δ ABC and the length of $\overline{AD}$



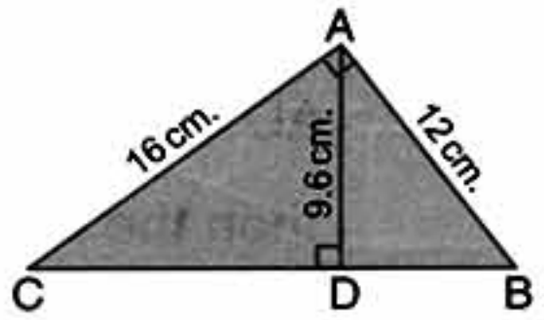
20 In the opposite figure :

ABC is a right-angled triangle , $\overline{AD} \perp \overline{BC}$,

AB = 12 cm. , AC = 16 cm. and AD = 9.6 cm.

Find the area of the triangle ABC

and the length of $\overline{BC}$



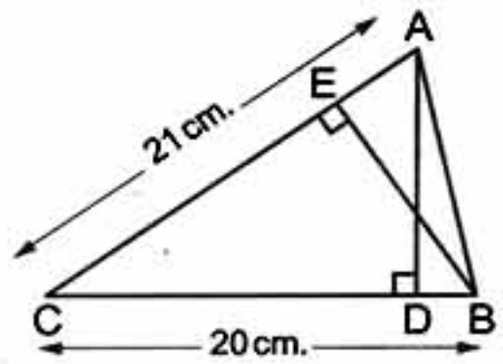
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Lesson One

21 **In the opposite figure , find :**

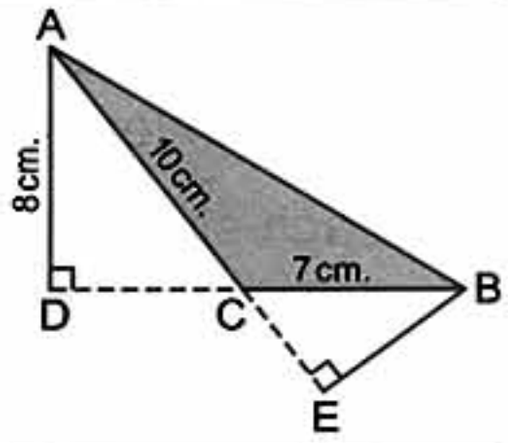
(a) The area of Δ ABC , where BE = 12 cm.

(b) The length of $\overline{AD}$



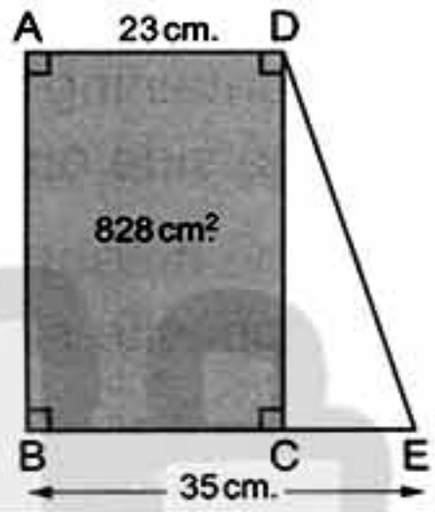
22 **In the opposite figure :**

ABC is a triangle in which BC = 7 cm.
and CA = 10 cm. If $\overline{AD} \perp \overrightarrow{BC}$, $\overline{BE} \perp \overrightarrow{AC}$
and AD = 8 cm. , find the length of $\overline{BE}$



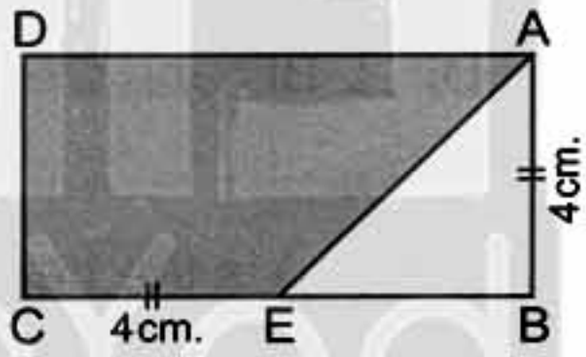
23 🕮 **In the opposite figure :**

ABCD is a rectangle whose area is 828 cm^2 ,
$E \in \overrightarrow{BC}$, AD = 23 cm. and BE = 35 cm.
Find the area of Δ DCE



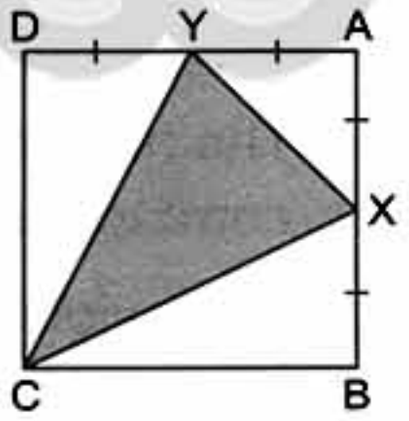
24 **In the opposite figure :**

If the perimeter of the rectangle ABCD
is 26 cm. , and AB = CE = 4 cm. ,
Find the area of Δ ABE
and the area of the figure AECD



25 🕮 **In the opposite figure :**

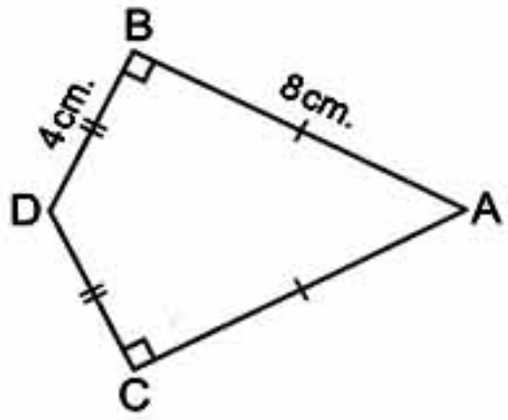
The side length of the square ABCD is 8 cm.
, X is the midpoint of $\overline{BA}$, Y is the midpoint of $\overline{DA}$,
Find the area of the three non coloured triangles ,
then conclude the area of Δ XCY.



Challenge

26 **In the opposite figure :**

If AB = AC = 8 cm. , m (∠ B) = m (∠ C) = 90°
and DB = DC = 4 cm.,
Find the area of the opposite figure.



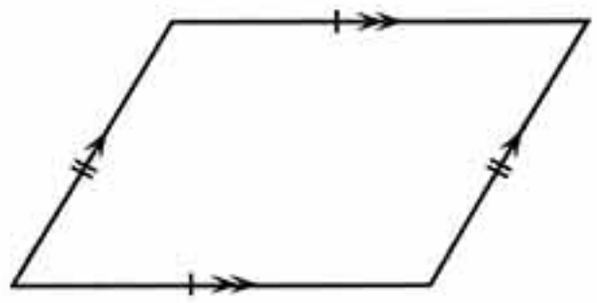
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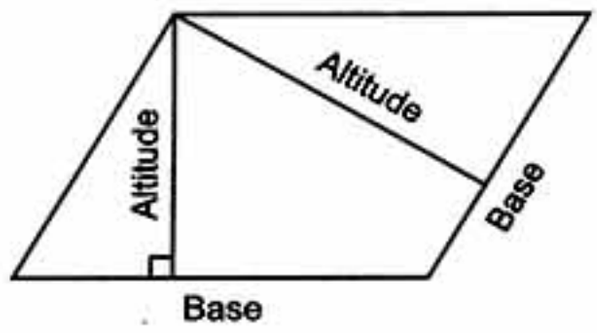
Lesson 2 Area of parallelogram

Prelude

- The parallelogram is a quadrilateral in which each two opposite sides are equal in length and parallel.



- Each side of the parallelogram could be considered as a base of it.
- The altitude of the parallelogram is a perpendicular line segment from a line containing the base to a line containing the side opposite the base.

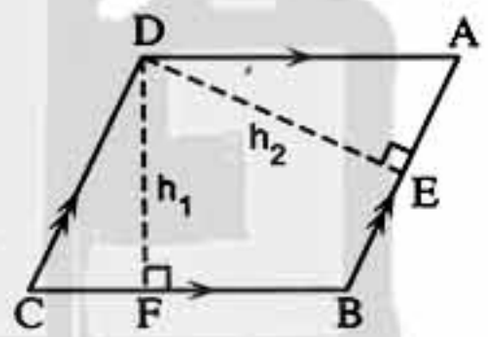


- The height of the parallelogram is the length of its altitude of any two opposite sides.

In the opposite figure :

If ABCD is a parallelogram ,

$\overline{DF} \perp \overleftrightarrow{BC}$ and $\overline{DE} \perp \overleftrightarrow{AB}$



Then :

* DF (h_1) is the height corresponding to the base $\overline{BC}$
* DE (h_2) is the height corresponding to the base $\overline{AB}$

Notice that :

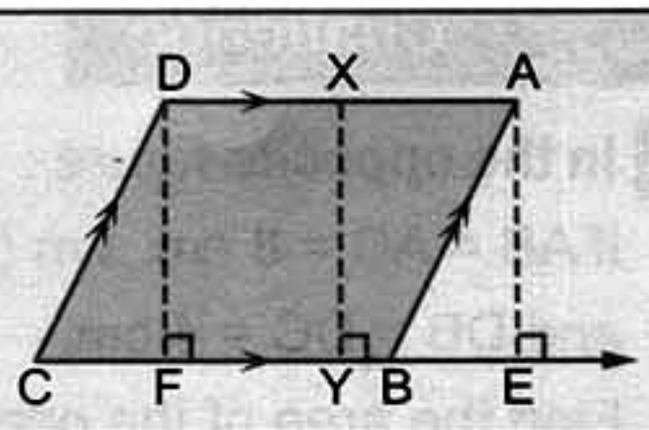
* The height corresponding to the base $\overline{BC}$ is itself the height corresponding to the base $\overline{AD}$
* The height corresponding to the base $\overline{AB}$ is itself the height corresponding to the base $\overline{CD}$

Remark :

In the opposite figure :

AE = XY = DF

and each of them is considered as a height of the parallelogram ABCD



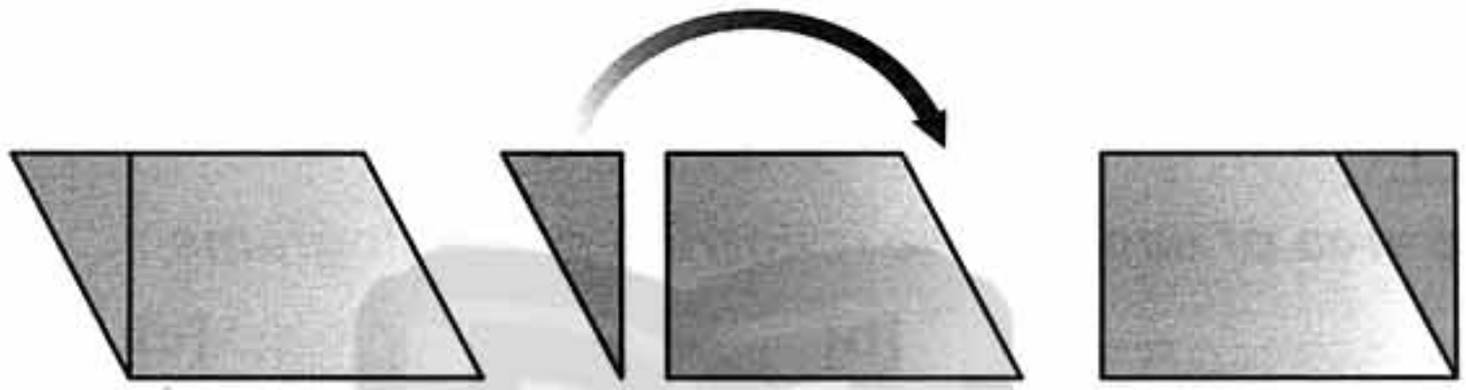
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Lesson Two

Area of a parallelogram

- A parallelogram can be cut and the cut piece can be shifted to form a rectangle with the same base length and height as the original parallelogram.



So, the area of the parallelogram = the area of the rectangle

= the base length × the height

i.e. The area of the parallelogram = the base length × corresponding height

$A = b \times h$

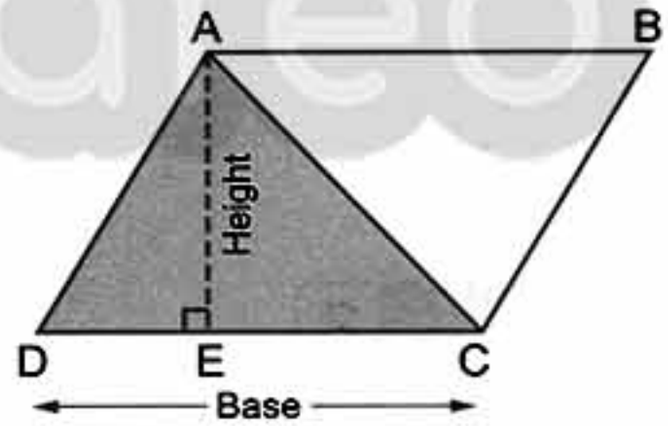
- You can deduce the previous rule by another method as the following :

You know that the diagonal of the parallelogram divides it into two congruent triangles.

i.e. Δ BCA is congruent to Δ DCA ,

then : the area of Δ BCA = the area of Δ DCA

hence : the area of the parallelogram ABCD



$= 2 \times$ the area of Δ DCA

$= \cancel{2} \times \frac{1}{\cancel{2}} \times DC \times AE$

$= DC \times AE$

i.e. The area of the parallelogram = the base length × corresponding height

$A = b \times h$

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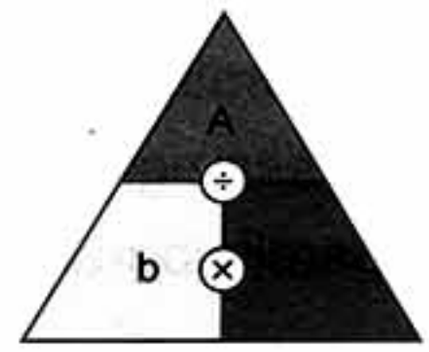
Notice that :

Using the opposite diagram , we note that :

[1] $A = b \times h$

[2] $h = \frac{A}{b}$

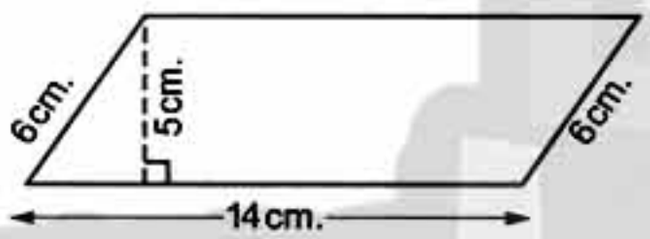
[3] $b = \frac{A}{h}$



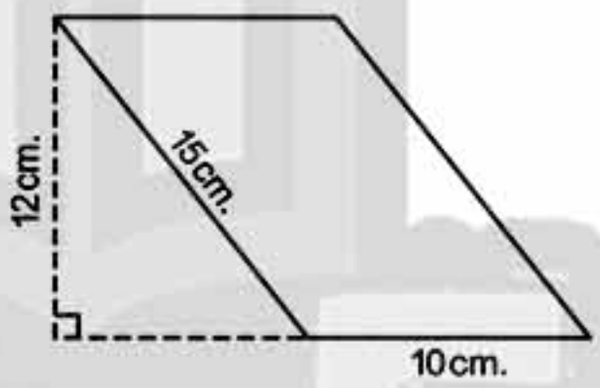
Example 1

Find the area of each of the following parallelograms :

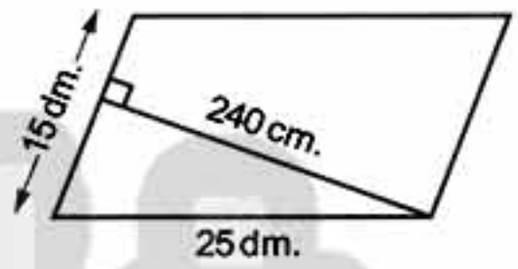
[a]



[b]



[c]



Solution

[a] The area of the parallelogram = $b \times h = 14 \times 5 = 70\ cm^2$

[b] The area of the parallelogram = $b \times h = 10 \times 12 = 120\ cm^2$

[c] The area of the parallelogram = $b \times h$

$= 15 \times 24$

$= 360\ dm^2$

Notice that :

240 cm. = 24 dm.

Example 2

[a] A parallelogram of area 63 cm^2 and the length of its base is 7 cm.
Find the corresponding height of this base.

[b] A parallelogram in which the lengths of two adjacent sides are 4 cm. , 6 cm. and its smaller height is 2 cm. Find its area.

[c] The lengths of two adjacent sides in a parallelogram are 6 cm. and 8 cm.
If its greater height is 4 cm. , then find its smaller height.

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Lesson Two

Solution

[a] The height of the parallelogram = $\frac{\text{its area}}{\text{the base length}} = \frac{63}{7} = 9$ cm.

[b] The area of the parallelogram = b × h

= 6 × 2 = 12 cm^2

[c] • The area of the parallelogram = b × h

= 6 × 4 = 24 cm^2

• The smaller height

= $\frac{\text{the area}}{\text{the length of the greater base}}$

= $\frac{24}{8}$ = 3 cm.

Notice that :

The area of the parallelogram
= the length of the smaller base × the greater height
= the length of the greater base × the smaller height

Try by yourself

Complete the following table for parallelograms :

Length of the base	The length corresponding height	The area
7 cm.	5 cm.	 cm^2
4 cm.	 cm.	24.8 cm^2
..... dm.	6.4 dm.	48 dm^2

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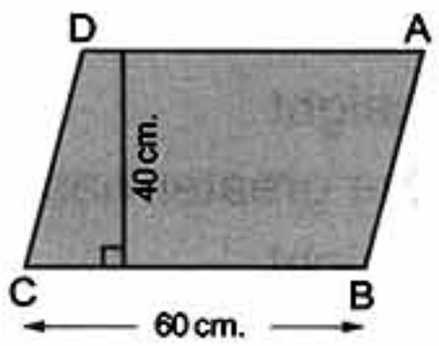
Unit Three

From the school book

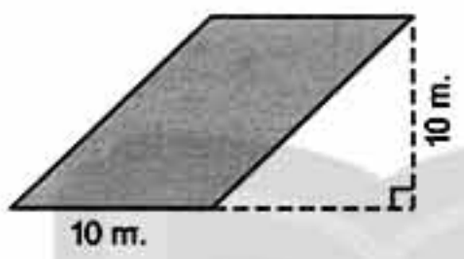
Exercise 2 — Area of parallelogram

1 Find the area of each parallelogram :

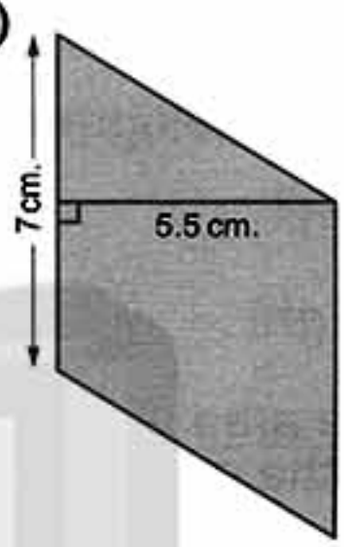
(a) 📖



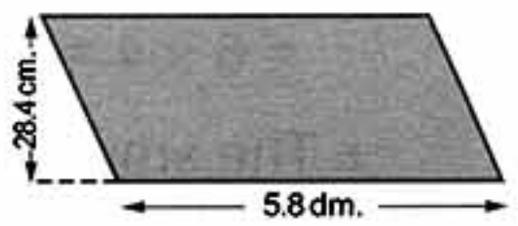
(b)



(c)

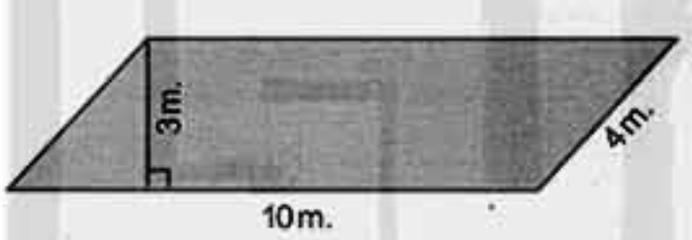


(d) 📖

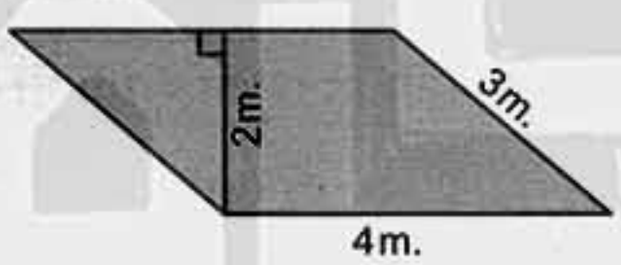


2 Find the area of each of the following parallelograms :

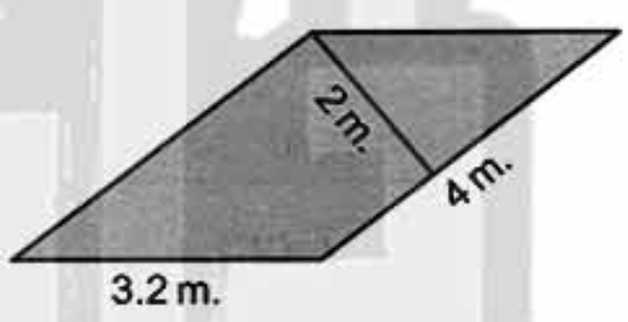
(a)



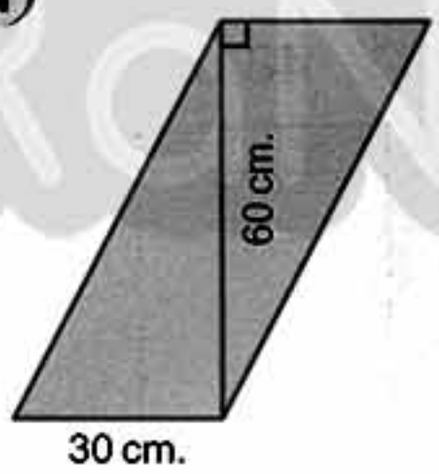
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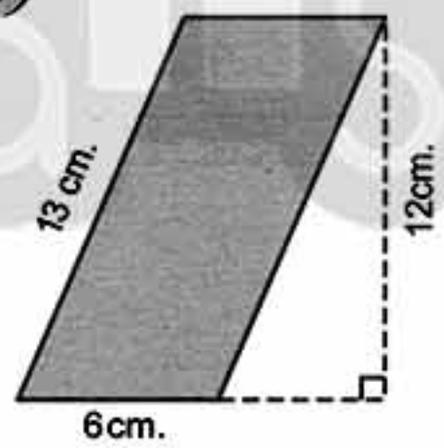
(c)



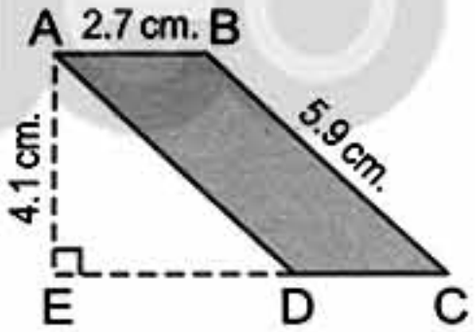
(d)



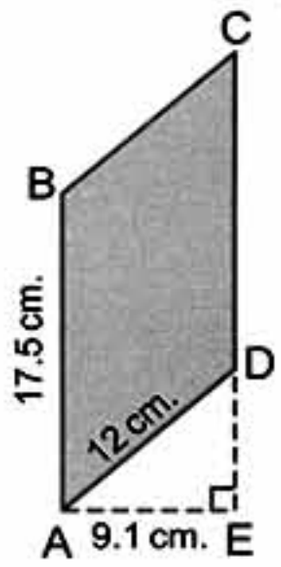
(e)



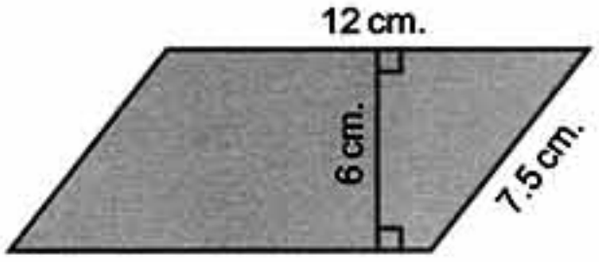
(f)



(g)



(h)



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Lesson Two

3 A parallelogram has a base of length 14 m. and a corresponding height 9 m. Find its area.

4 If the height of a parallelogram is 34.6 cm. and the corresponding base is of length 15.2 cm. , what is the area of the parallelogram ?

5 🕮 Find to the nearest hundreth the area of a parallelogram whose base length is 34.7 cm. and height 28.17 cm.

6 If the area of a parallelogram is 36 cm^2 and its height is 9 cm. , then find the length of the corresponding base of this height.

7 If the area of a parallelogram is 90 mm^2 and the length of the base is 9 mm. , find the height.

8 🕮 Complete the table for parallelograms :

Length of the base in cm.	Corresponding height in cm.	The area in $cm.^2$
8	3.25	
6.1		54.9
.....	4.2	63

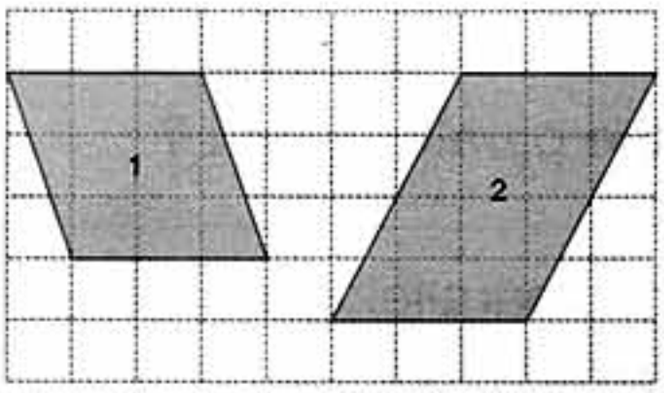
9 🕮 Which area is greater : the area of a parallelogram whose base length is 15.7 cm. and height 9.4 cm. or the area of a triangle whose base length is 14 cm. and height 18 cm.

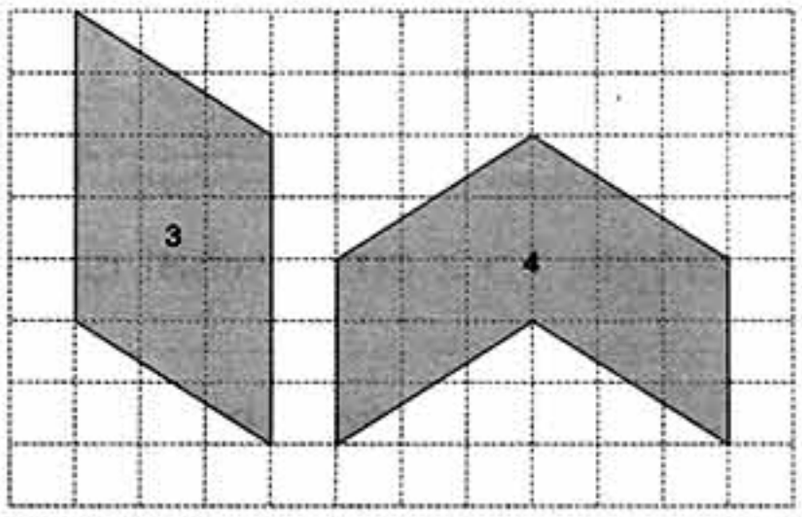
10 Find the area of the parallelogram ABCD if AB = 6 cm. , BC = 12 cm. , and the greater height is 4 cm.

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Unit Three

11 🕮 **Complete to find the area of the colored figures :**





- Area of figure 1 = ... × = ... square units.
- Area of figure 2 = ... × = ... square units.
- Area of figure 3 = ... × = ... square units.
- Area of figure 4 = ... + ... = ... square units.

12 **In the opposite figure , complete :**

Area of the parallelogram

ABCD = BC × DF = ... cm^2

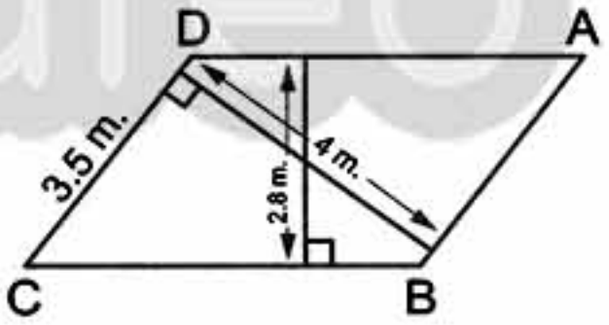
also , area of the parallelogram = ... × DE

deduce the length of $\overline{DE}$

13 **In the opposite figure :**

Find the area of the parallelogram ABCD ,

then find the length of $\overline{BC}$



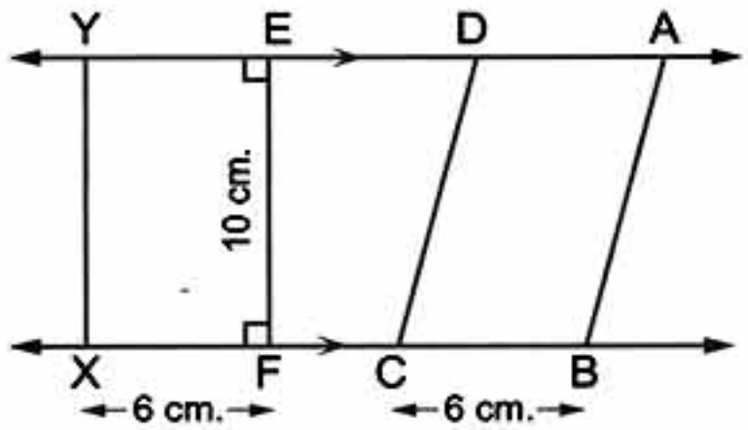
14 🕮 **In the opposite figure :**

$\overleftrightarrow{AY}$ // $\overleftrightarrow{BX}$, ABCD is a parallelogram

and EFXY is a rectangle

Compare the area of the parallelogram

and the area of the rectangle.

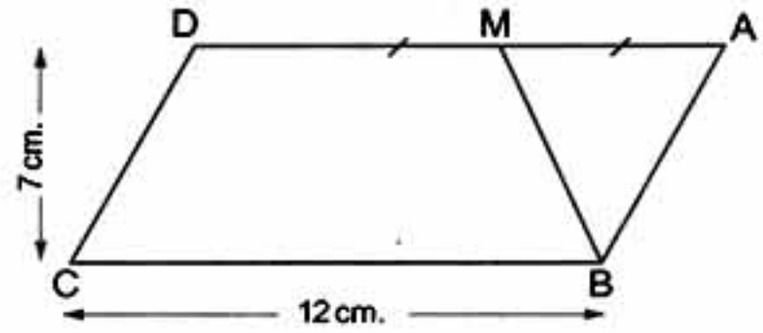


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Lesson Two

15 🕮 **In the opposite figure : Complete :**



ABCD is a parallelogram where ,

BC = 12 cm. , AD = ... cm. ,

AM = ... cm.

the area of the parallelogram ABCD = ... cm^2

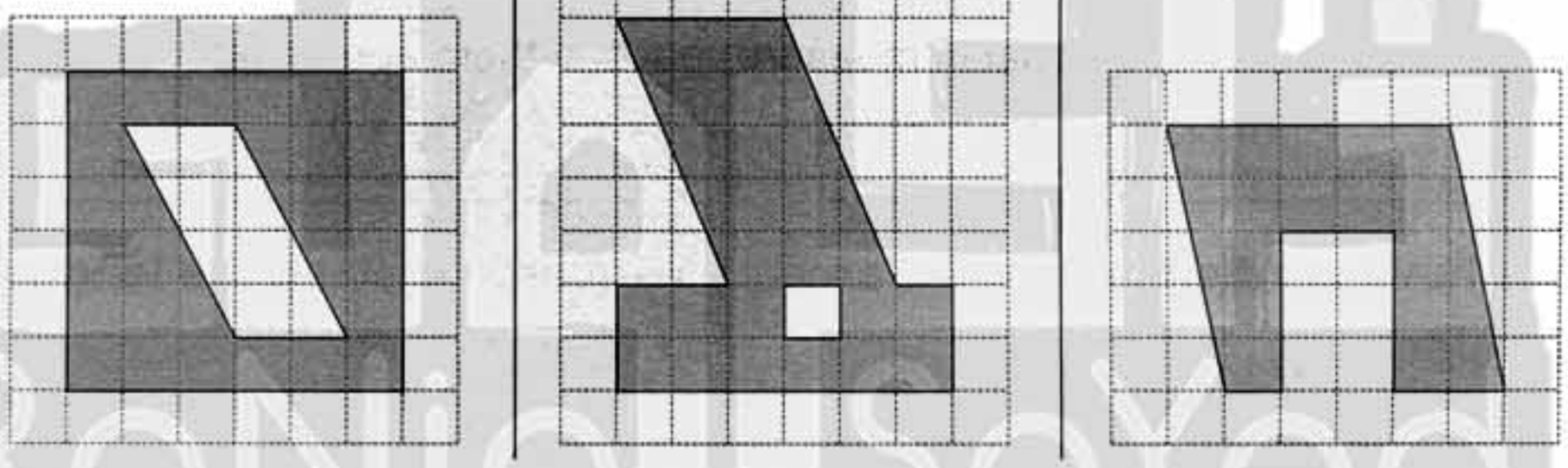
the area of the triangle ABM = ... cm^2

the area of the figure MBCD = ... cm^2

16 The length of the base is equal to the corresponding height in a parallelogram. What is the base length if the area of the parallelogram is 81 $cm.^2$?

17 **Find the area of the shaded part :**

(a) (b) (c)





Challenge

18 What happens to the area of a parallelogram if its height is doubled ?

19 ABCD is a parallelogram of area 375 cm^2 , E is a point on $\overline{CD}$, find the area of the triangle AEB

20 🕮 Patterns : Khaled drew parallelograms this way : the first with base length = 2 cm. and height = 2 cm. the second with base length = 2 cm. and height = 4 cm. the third with base length = 2 cm. and height = 8 cm. and continued with this pattern. Find the area of the eighth parallelogram according to his pattern.

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Unit Three

Lesson 3 Area of square in terms of its diagonal length

Remember that :

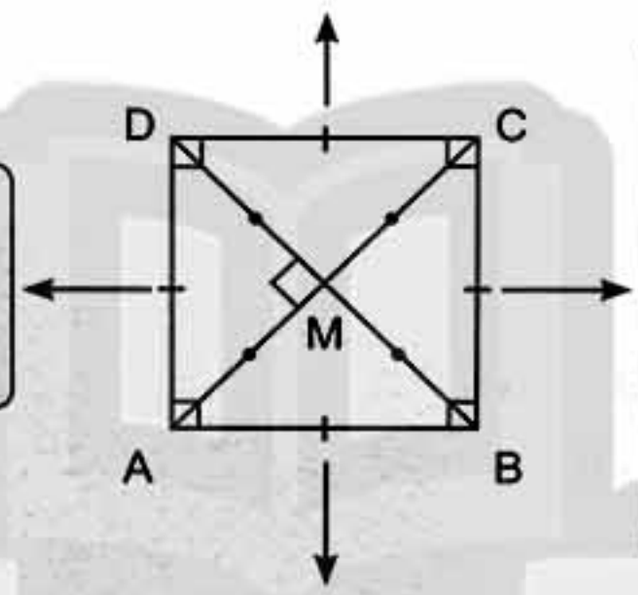
Square is a quadrilateral has the following properties :

Its sides are equal in length

$AB = BC = CD = DA$

Each two opposite sides are parallel

$\overline{AB} \parallel \overline{CD}$, $\overline{BC} \parallel \overline{AD}$



Its two diagonals :

- are equal in length
 $AC = BD$
- are perpendicular
 $\overline{AC} \perp \overline{BD}$
- bisect each other
 $AM = MC$, $BM = MD$

Its angles are equal in measure, each of them equals 90°

$m(\angle A) = m(\angle B) = m(\angle C) = m(\angle D) = 90°$

- **We have studied before the area of a square knowing the length of its side :**

The area of the square = the side length × itself

$A = S \times S$

For example :

A square whose side length is 4 cm. , then its area = $4 \times 4 = 16$ cm^2.

Example 1

A square whose perimeter = 32 cm. Find its area.

Solution

- The perimeter of the square = the side length × 4

i.e. the side length = $\frac{\text{the perimeter}}{4} = \frac{32}{4} = 8$ cm.

- The area of the square = the side length × itself

$= 8 \times 8 = 64$ cm^2.

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Lesson Three

Try by yourself

A square whose side length is 2.5 cm. Find its area :

.....

.....

The area of the square knowing the length of its diagonal :

Then :

The area of the square = $\frac{1}{2}$ *the length of its diagonal* × *itself*

$$A = \frac{1}{2} \times d \times d$$

For example :

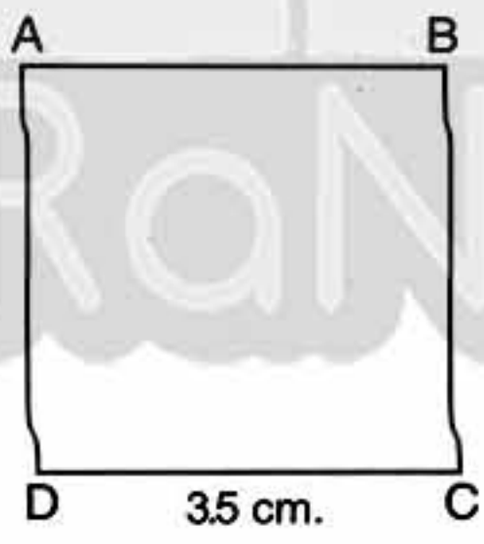
A square whose diagonal length is 6 cm.

, then its area = $\frac{1}{2} \times 6 \times 6 = \frac{1}{2} \times 36 = 18$ cm^2.

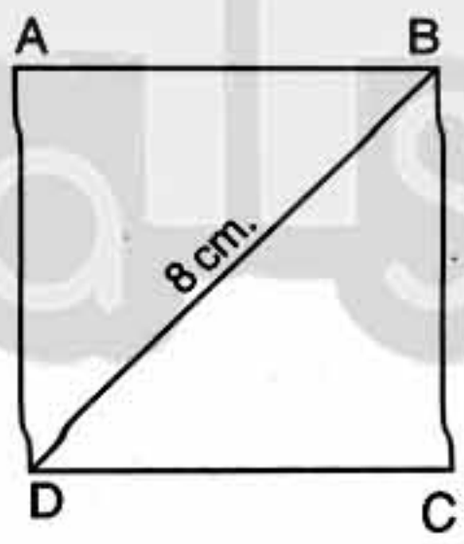
Example 2

Find the area of each of the following squares :

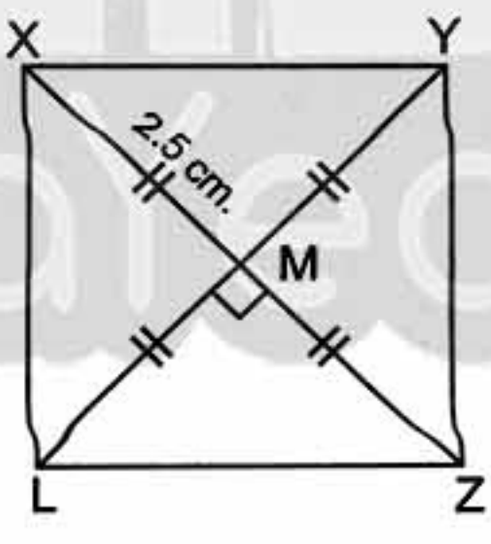
[a]



[b]



[c]



Solution

[a] The area of the square ABCD = S × S

= 3.5 × 3.5 = 12.25 cm^2.

[b] The area of the square ABCD = $\frac{1}{2} \times d \times d$

= $\frac{1}{2} \times 8 \times 8 = 32$ cm^2.

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[c] XM = 2.5 cm. So , XZ = $2 \times 2.5 = 5$ cm.

, Then the area of the square XYZL $= \frac{1}{2} \times d \times d$

$= \frac{1}{2} \times 5 \times 5 = 12.5$ cm^2

Example 3

[a] The area of a square is 50 cm^2 , find its diagonal length.

[b] The area of a square is 49 cm^2 , find its perimeter.

Solution

[a] The area of the square $= \frac{1}{2} \times d \times d$

$50 = \frac{1}{2} \times d \times d$

$100 = d \times d$

, then the diagonal length is 10 cm. [because : $10 \times 10 = 100$]

[b] The area of a square = the side length × itself

$49 = S \times S$

, then the side length = 7 cm. [because : $7 \times 7 = 49$]

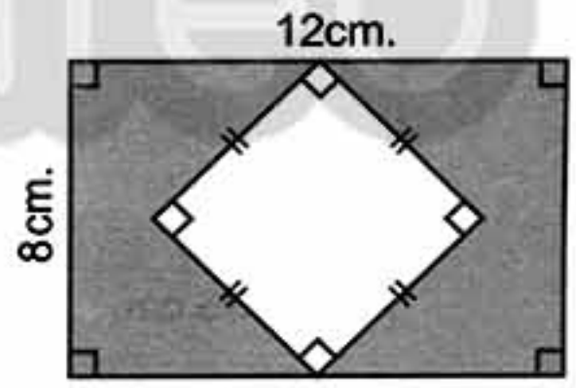
So, the perimeter = the side length × 4

$= 7 \times 4 = 28$ cm.

Example 4

Find the area of the shaded part.

Solution



The area of the rectangle = $12 \times 8 = 96$ cm^2

The area of the square $= \frac{1}{2} \times 8 \times 8 = 32$ cm^2

So, The area of shaded part

= the area of the rectangle – the area of the square

= 96 – 32 = 64 cm^2

Try by yourself

Complete the following :

[a] If the diagonal length of a square is 7 cm. , then its area is

[b] If the area of a square is 8 cm^2 , then its diagonal length is

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Lesson Three

📖 From the school book

Exercise 3 Area of square in terms of its diagonal length

1 Complete :

(a) The area of the square = the side length ×

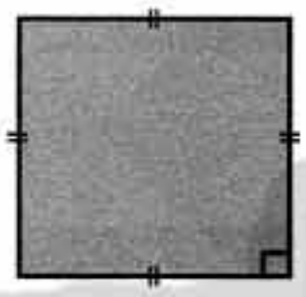
(b) The area of the square = $\frac{1}{2}$ × ×

(c) If the side length of the square = 4 cm. , then its area = ... cm^2

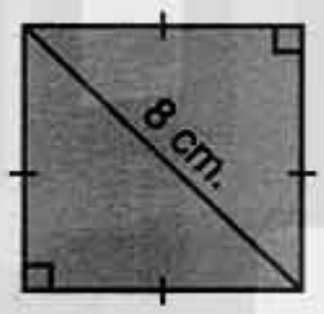
(d) If the length of the diagonal of the square = 10 cm. , then its area = ... cm^2

2 Find the area of each of the following squares :

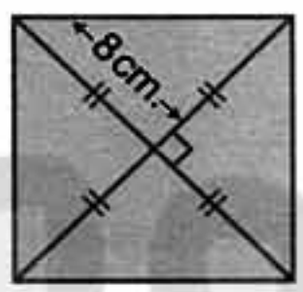
(a)



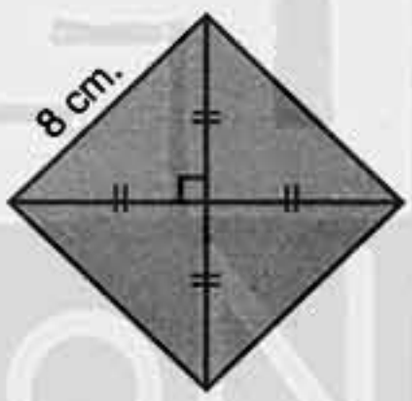
(b) 📖



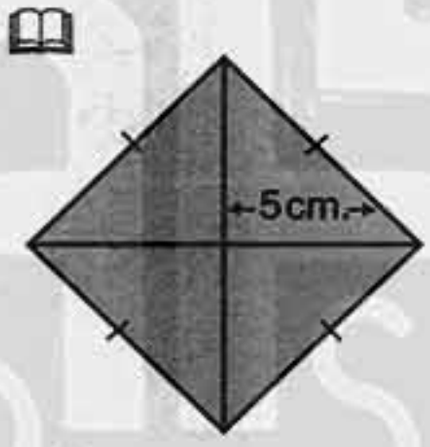
(c)



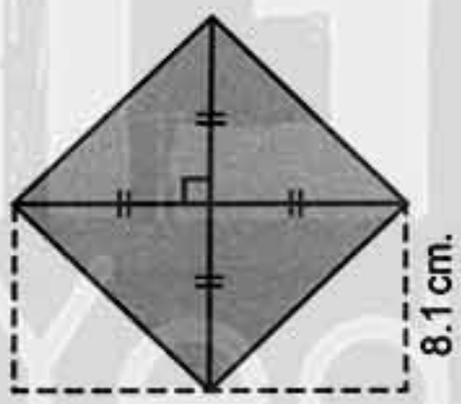
(d)



(e) 📖



(f)



3 A square is of side length 7 cm. , find its area.

4 📖 The diagonal length of a square is 6 cm. , find its area.

5 If the length of the diagonal of a square is 5.4 cm. , then find its area.

6 A square has a side length of 1.6 m. , find its area.

7 If the area of a square is 64 cm^2. , find its side length and its perimeter.

8 The area of a square is 24.5 cm^2. , find the length of its diagonal.

9 Find the area of a square whose perimeter is 12 cm.

10 Which is greater in area : a square of side length 9 cm. or another square of diagonal length 12 cm. ?

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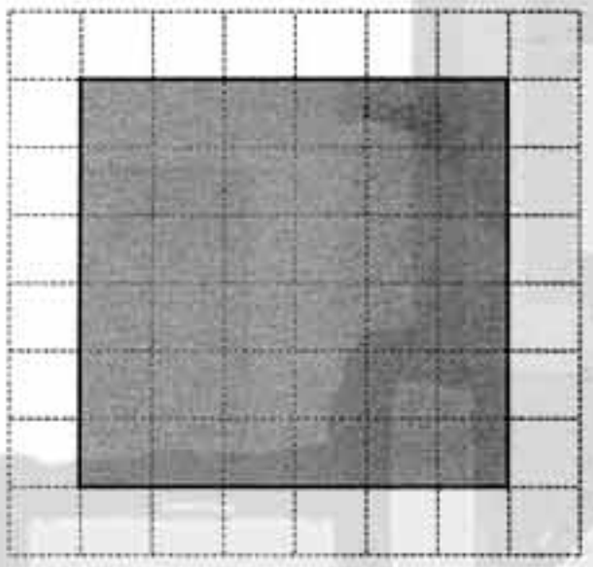
11 Which is greater in area : a square whose diagonal is 10 cm. or a right-angled triangle whose right angle sides are 8 cm. and 15 cm.

12 The area of a square equals the area of the rectangle whose dimensions are 2 cm. and 9 cm. Find the length of the diagonal of the square.

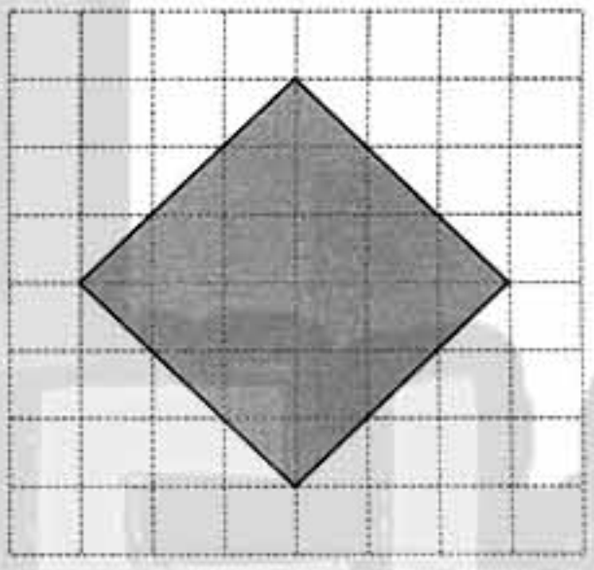
13 Two pieces of land are equal in area. The first is a square-shaped and the second is a rectangle of length 9 m. and width 4 m. Find the perimeter of the square piece.

14 Calculate the area of each of the following :

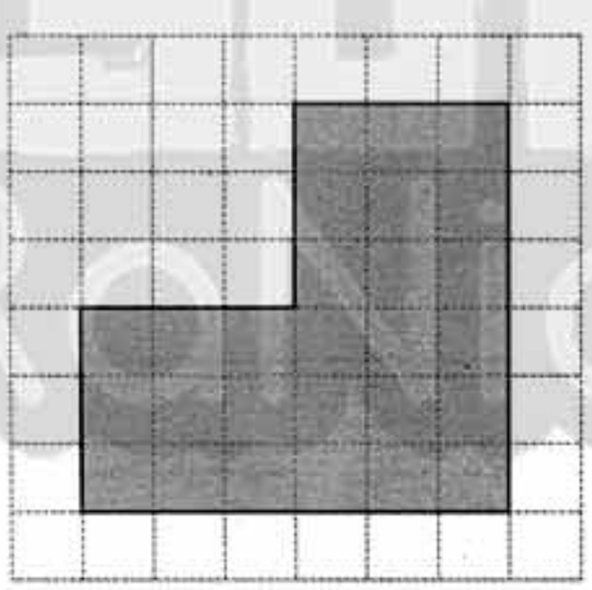
(a)



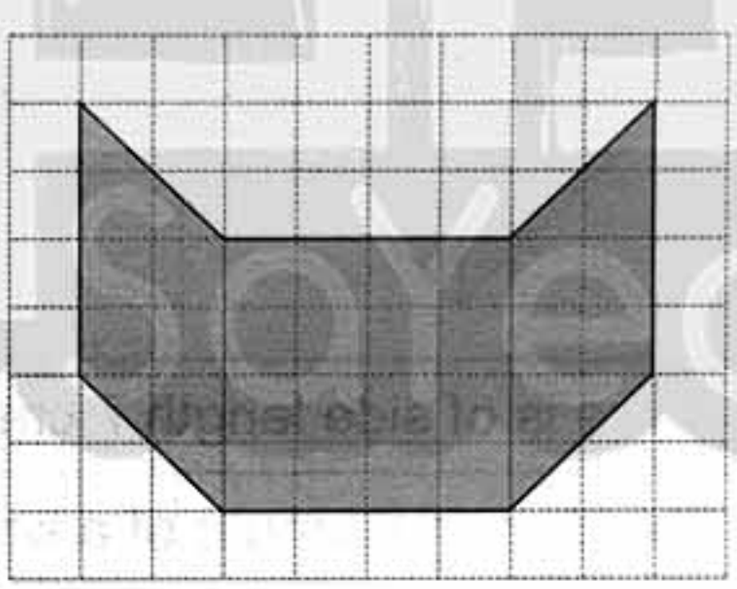
(b)



(c)



(d)



15 🕮 A square shaped piece of land with diagonal length 28 m. A square shaped house with side length 15 m. has been built on it and the left part was used as a garden. Find the area of the garden.



16 🕮 A piece of land has the shape of a parallelogram whose base length is 18 m. and its corresponding height is 10 m. A flower basin has the shape of a square whose diagonal length is 7 m. Find the area of the surface left.

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17 A piece of land has the shape of a square whose diagonal length is 24 m. , inside this piece of land , a house was built that has a square base whose side length is 12 m. , and the rest of the area was planted as a garden for this house. Find the area of this garden.

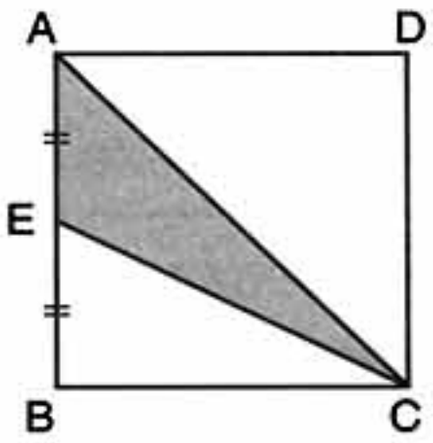
18 📖 The area of a piece of paper is 312.5 cm^2 if 7 congruent squares with diagonal lengths of each 9 cm. are cut off. Find the area of the left part of the paper.

19 **In the opposite figure :**

ABCD is a square , E is the midpoint of $\overline{AB}$,

the area of the square ABCD equals 36 cm^2

Find the area of Δ AEC



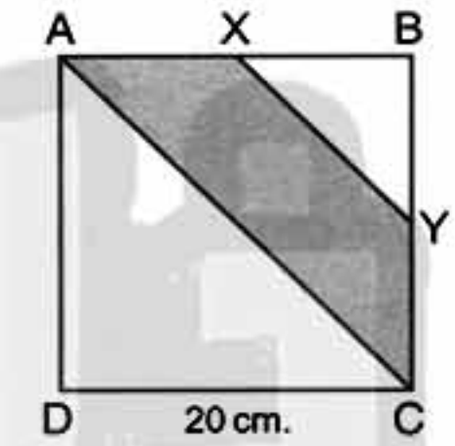
20 **In the opposite figure :**

ABCD is a square of side length = 20 cm.

, X is the midpoint of $\overline{AB}$

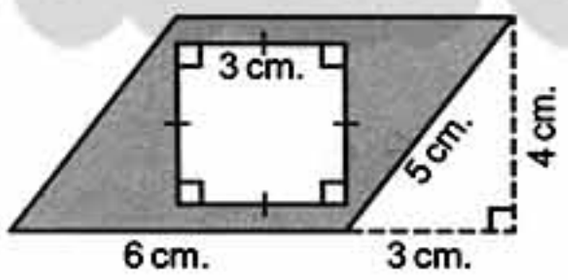
, Y is the midpoint of $\overline{BC}$

, then find the area of the shaded part.

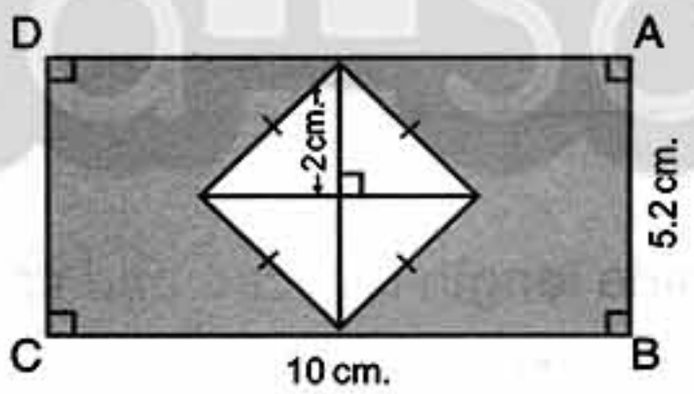


21 **Find the area of the shaded part :**

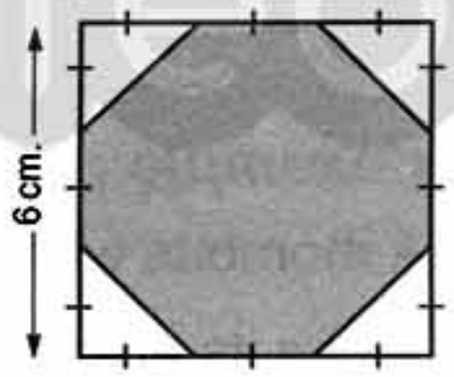
(a)



(b) 📖



(c)





Challenge

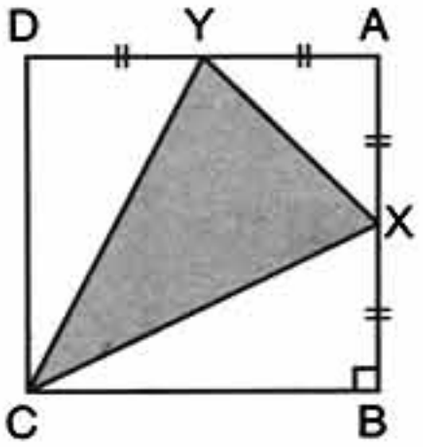
22 **In the opposite figure :**

The area of the square ABCD = 64 cm^2

, X is the midpoint of $\overline{AB}$

, Y is the midpoint of $\overline{AD}$

Find the area of Δ XYC



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Unit Three

Lesson 4 Area of rhombus in terms of its diagonal lengths

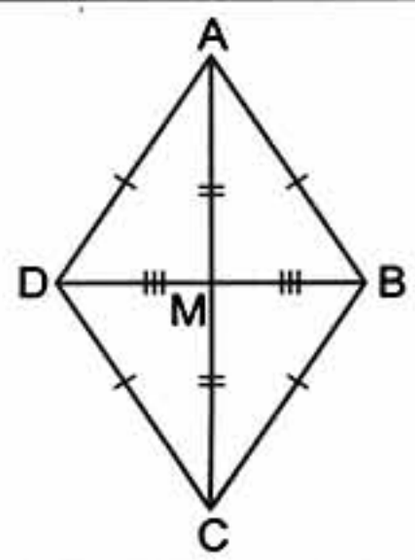
Remember that :

- The rhombus is a parallelogram whose four sides are equal in length

 i.e. AB = BC = CD = DA

- The two diagonals of the rhombus are perpendicular and bisect each other

 i.e. • $\overline{AC} \perp \overline{BD}$ • AM = CM , BM = DM



* We can deduce the area of a rhombus by two ways.

First **The area of the rhombus knowing the length of its side and its height**

• We said that : The rhombus is a parallelogram.

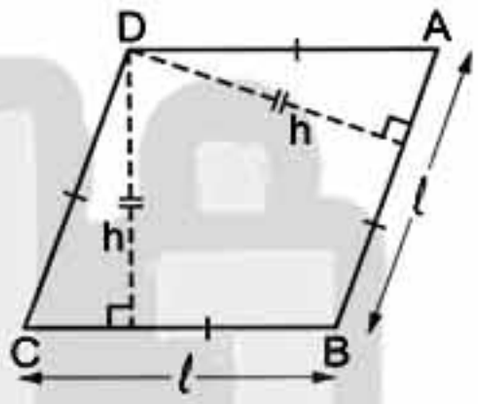
So , the area of the rhombus

= the area of the parallelogram

But the area of the parallelogram

= the length of the base (ℓ) × the corresponding height (h)

and the sides of the rhombus are equal in length and its heights are equal.



, then : The area of the rhombus = the side length × the height

$A = \ell \times h$

For example :

A rhombus whose side length is 5 cm. and its height is 3 cm.

, then its area = $5 \times 3 = 15$ cm^2.

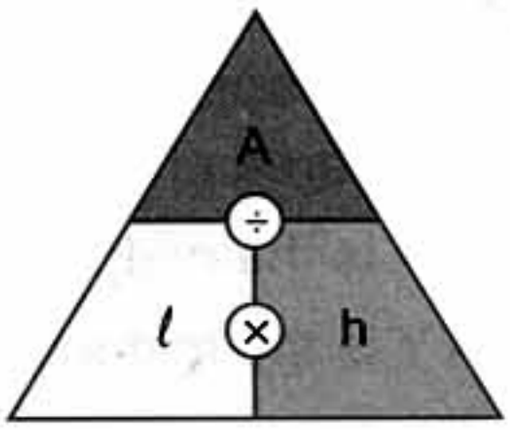
Notice that :

Using the opposite diagram , we note that :

[1] $A = \ell \times h$

[2] $h = \frac{A}{\ell}$

[3] $\ell = \frac{A}{h}$



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Lesson Four

Example 1

[1] A rhombus whose perimeter = 20 cm. and its height is 4 cm. Find its area.

[2] A rhombus of side length 5 cm. and its area is 45 cm^2. Find its height.

Solution

[1] • The perimeter of the rhombus = the side length × 4

i.e. the side length = $\frac{\text{the perimeter}}{4}$

So, the side length = $\frac{20}{4}$ = 5 cm.

, then : The area of the rhombus = the side length × the height

= 5 × 4 = 20 cm^2.

[2] The height of the rhombus = $\frac{\text{its area}}{\text{side length}} = \frac{45}{5}$ = 9 cm.

Try by yourself

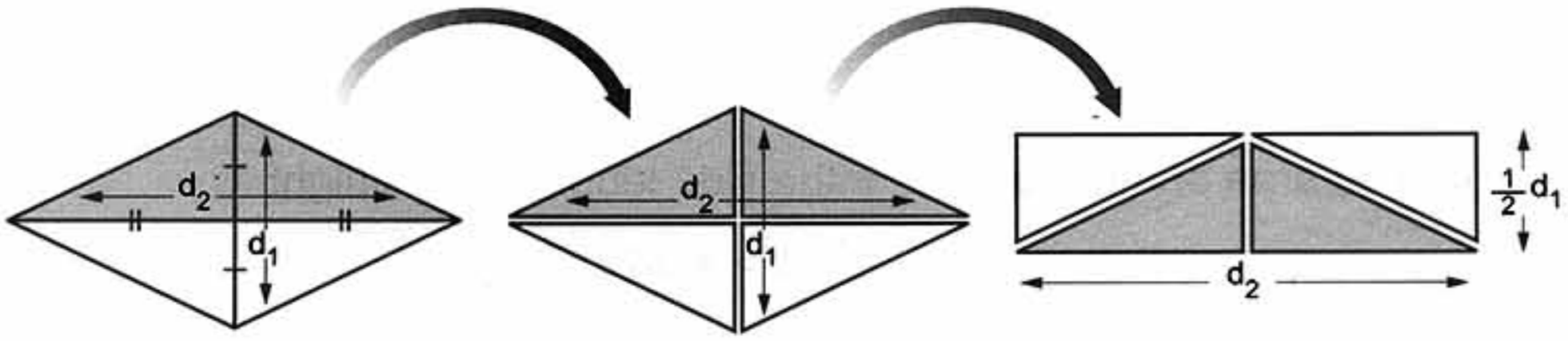
Complete the following table :

The side length of a rhombus	Its height	Its area
5 cm.	3 cm.	
9 cm.		36 cm^2.
.....	5 cm.	24.5 cm^2.

Second **The area of the rhombus knowing the lengths of its two diagonals.**

• **We know that :** The two diagonals of the rhombus are perpendicular and bisect each other.

So, the rhombus can be cut into pieces and rearranging these pieces form a rectangle as follows :



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So, The area of the rhombus = the area of the rectangle = $\frac{1}{2}\ d_1 \times d_2$

i.e. The area of the rhombus = $\frac{1}{2}$ the product of the lengths of its two diagonals

$$A = \frac{1}{2}\ d_1 \times d_2$$

For example :

A rhombus whose diagonals lengths are 8 cm. and 6 cm.

, then its area = $\frac{1}{2} \times 8 \times 6 = \frac{1}{2} \times 48 = 24\ cm^2$

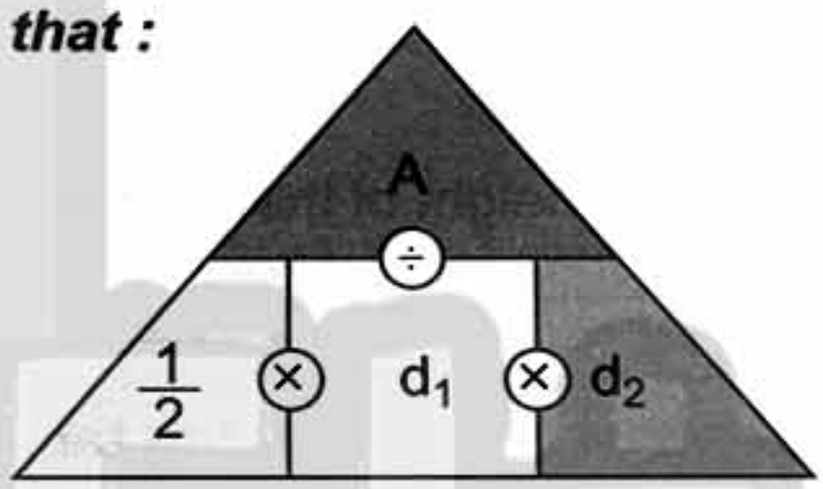
Notice that :

Using the opposite diagram , we note that :

[1] $A = \frac{1}{2} \times d_1 \times d_2$

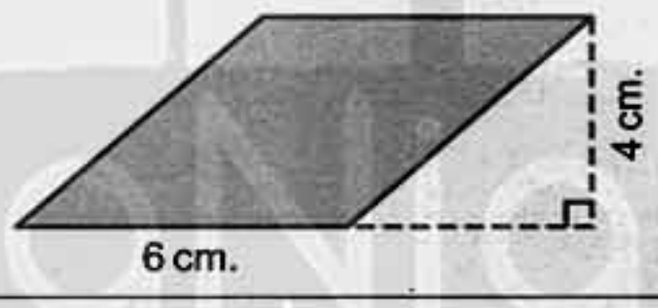
[2] $d_1 = \frac{A}{\frac{1}{2} \times d_2}$

[3] $d_2 = \frac{A}{\frac{1}{2} \times d_1}$

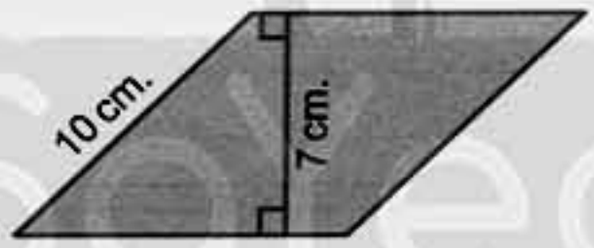


Example 2 ***Find the area of each of the following rhombuses :***

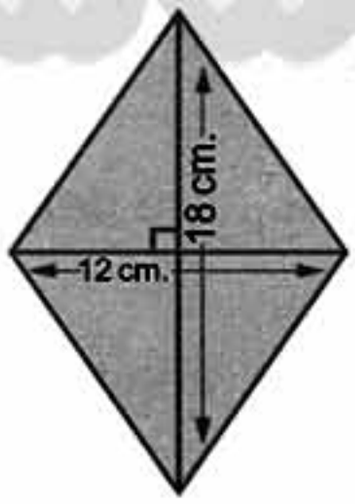
[a]



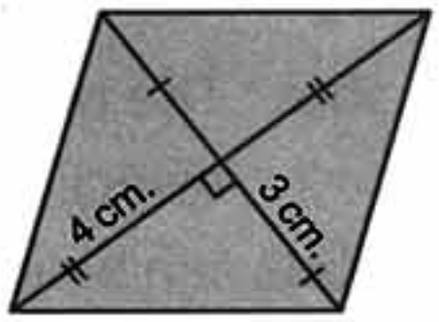
[b]



[c]



[d]



Solution

[a] The area of the rhombus = the side length × the height

$= 6 \times 4 = 24\ cm^2$

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[b] The area of the rhombus = the side length × the height

$$= 10 \times 7 = 70 \text{ cm}^2$$

[c] The area of the rhombus = $\frac{1}{2}$ the product of its diagonals lengths

$$= \frac{1}{2} \times 18 \times 12 = 108 \text{ cm}^2$$

[d] The area of the rhombus = $\frac{1}{2}$ the product of its diagonals lengths

$$= \frac{1}{2} \times 8 \times 6 = 24 \text{ cm}^2.$$

Example 3

Which is greater in area a triangle which has a side of length 25 cm. and the corresponding height to this side is 6 cm. or a rhombus whose lengths of diagonals equal 8 cm. and 15 cm.

Solution

The area of the triangle = $\frac{1}{2}$ the base length × its height

$$= \frac{1}{2} \times 25 \times 6 = 75 \text{ cm}^2$$

, the area of the rhombus = $\frac{1}{2}$ the product of its diagonals lengths

$$= \frac{1}{2} \times 8 \times 15 = 60 \text{ cm}^2$$

So, the area of the triangle is greater than the area of the rhombus.

Try by yourself

Which is greater in area , a rhombus whose diagonal lengths are 16 cm. and 18 cm. or a square whose diagonal length is 17 cm. ?

.....

.....

.....

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Unit Three

From the school book

Exercise 4 Area of rhombus in terms of its diagonal lengths

1 Complete :

(a) The area of the rhombus = the side length ×

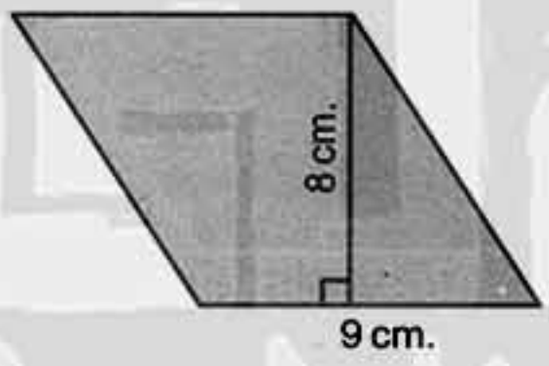
(b) The area of the rhombus = $\frac{1}{2}$ × the product of

(c) If the lengths of the diagonals of a rhombus are 20 cm. and 10 cm. , then its area = ... cm^2

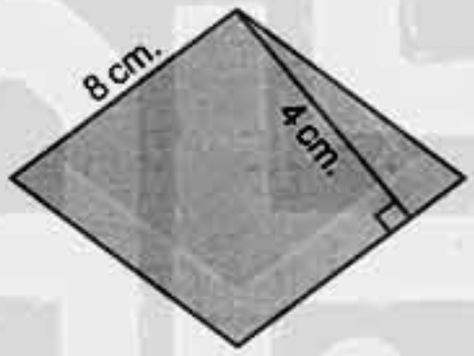
(d) A rhombus is of side length 12 cm. and its height = 4 cm. , then its area = ... cm^2

2 Find the area of each of the following rhombuses :

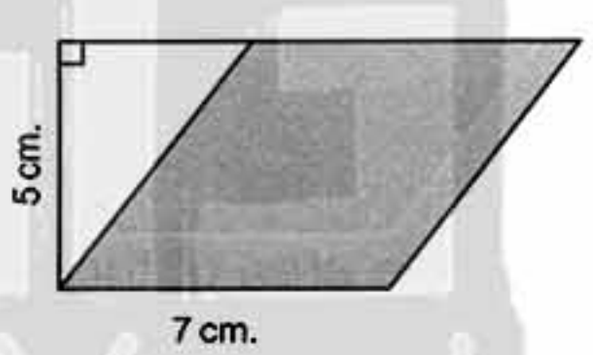
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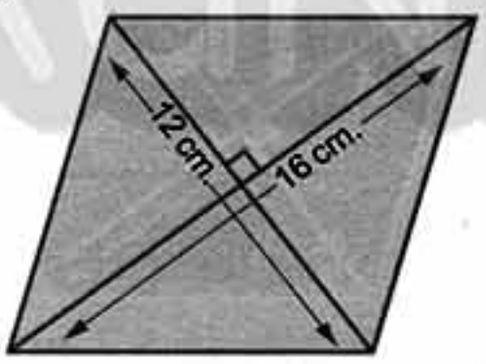
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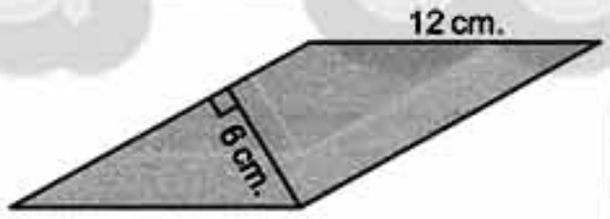
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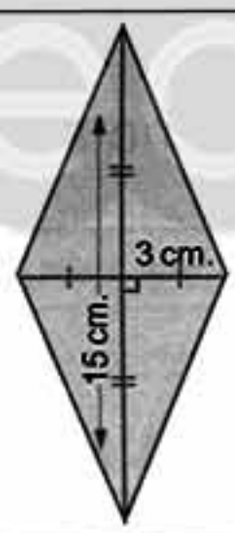
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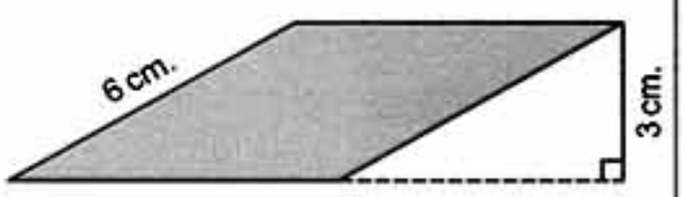
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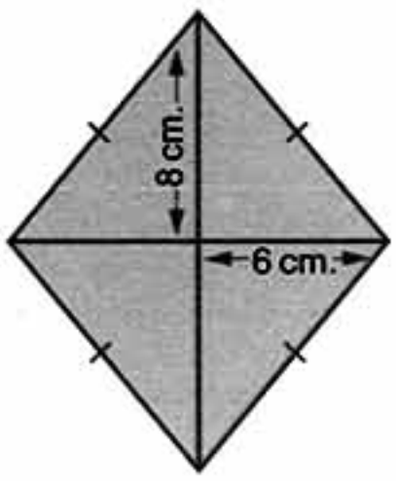
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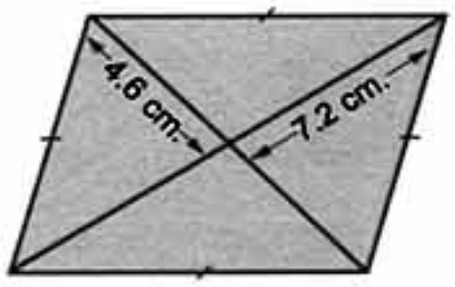
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(i)

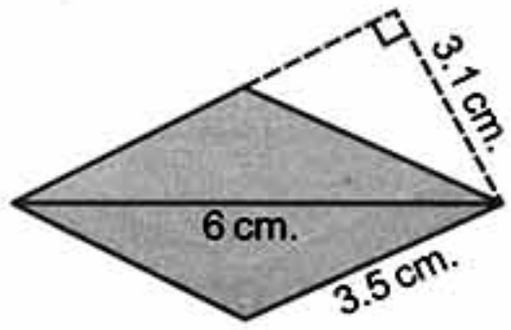


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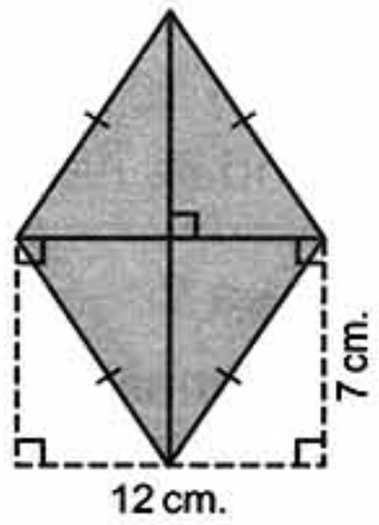


Lesson Four

(j)



(k) 🕮



3 A rhombus of side length = 6 cm. and its height is 5 cm. Find its area.

4 The lengths of the diagonals of a rhombus are 3.4 cm. and 5.5 cm. Find its area.

5 If the area of a rhombus is 26 cm^2. and its side length equals 6.5 cm. Find its height.

6 If the height of a rhombus is 10 cm. and its area = 54 cm^2. Find its side length.

7 The area of a rhombus is 20 cm^2. and the length of one of its diagonals is 5 cm. , then find the length of the other diagonal.

8 The area of a rhombus is 240 cm^2. and the length of one of its diagonals is 0.2 m. , then find the length of the other diagonal.

9 🕮 **Complete the following table :**

Diagonal length of rhombus	The other diagonal length of rhombus	Area of rhombus in square units
3 cm.	5.4 cm.	 cm^2
2.3 cm.	 cm.	4.6 cm^2
24 mm.	3 cm.	 mm^2
27 cm.	 dm.	8.1 dm^2
1.7 m.	 cm.	3.4 m^2

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Unit Three

10 Which is greater in area ?

A triangle of base length 10 cm. and its height 6 cm. or a rhombus whose side length is 7 cm. and its height is 4 cm.

11 Which is smaller in area ?

A rhombus whose diagonals lengths are 8 cm. and 5 cm. or a square whose diagonal length is 7 cm.

12 🕮 Which figure has greater area ?

A parallelogram whose base length is 5.4 cm. and its corresponding height is 4.1 cm. or a rhombus with diagonal lengths 5.4 cm. and 4.1 cm.

13 Find the area of a rhombus of side length = 8 cm. and its height equals twice its side length.

14 Find the area of a rhombus if the length of its smaller diagonal = 3 cm. and its greater diagonal equals three times the smaller one.

15 Find the area of the rhombus whose perimeter is 36 cm. and its height is 5.2 cm.

16 🕮 Find the area of a rhombus with diagonal lengths 7 cm. and 9 cm. and if its height is 5 cm. , find its side length.

17 🕮 If the area of a parallelogram with base length 12 cm. and its corresponding height of 6 cm. is equal to the area of a rhombus with a diagonal length 10 cm. , then find the length of the other diagonal of the rhombus.

18 Two pieces of land have the same area. The first is in the shape of a square and the second is in the shape of a rhombus with diagonals equal to 8 m. and 16 m. long. Find the perimeter of the square piece of land.

19 If the perimeter of a rhombus is 24 cm. and its area is 30 cm^2. , then find its height.

20 The side length of a rhombus is 5 cm. , its height is 4.8 cm. and the length of one of its diagonals is 6 cm. Calculate the length of the other diagonal.

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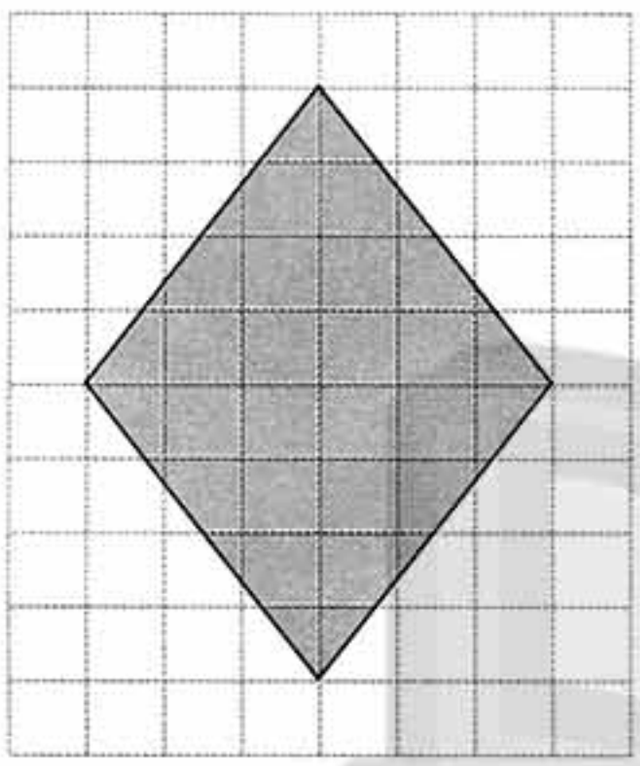


Lesson Four

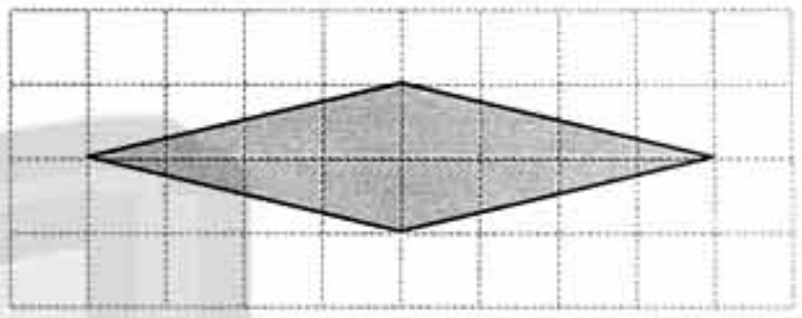
21 If the product of the lengths of the diagonals of a rhombus is 96 cm^2. and its height is 6 cm. , then find the length of its side.

22 Calculate the area of each of the following :

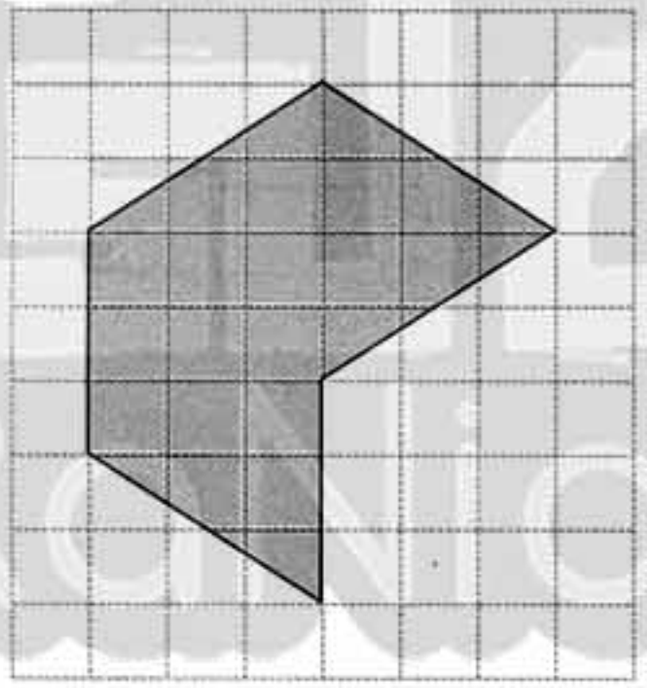
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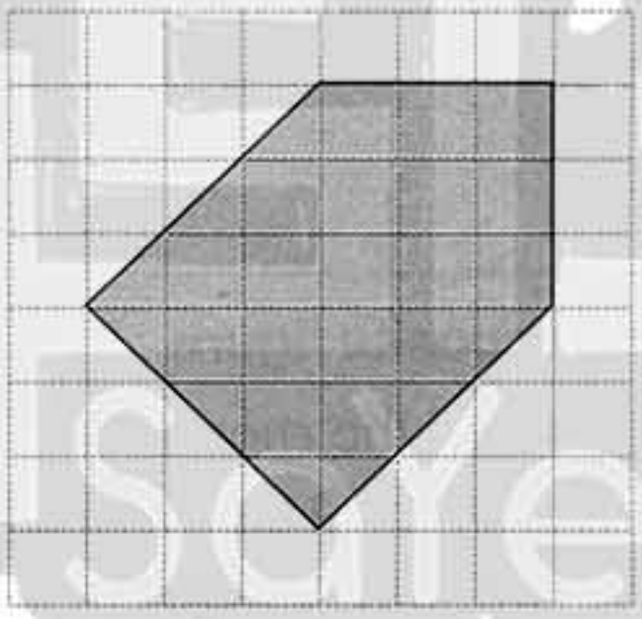
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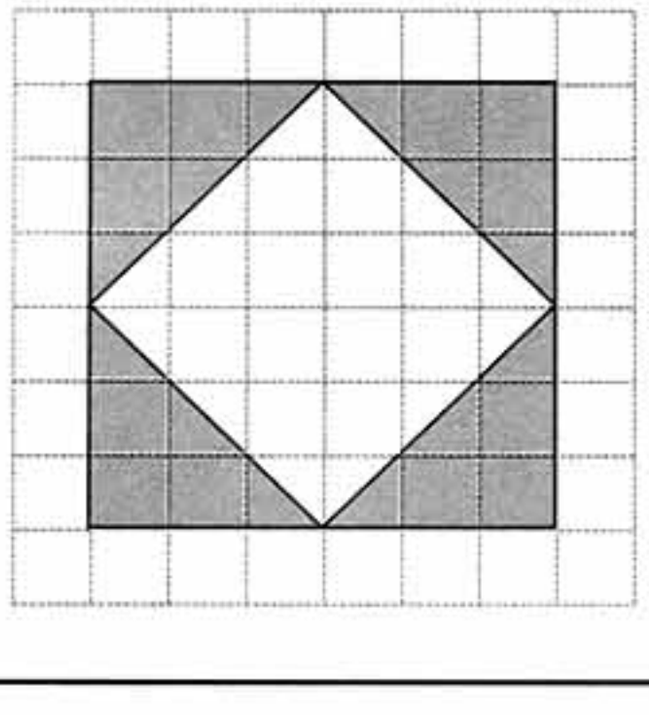


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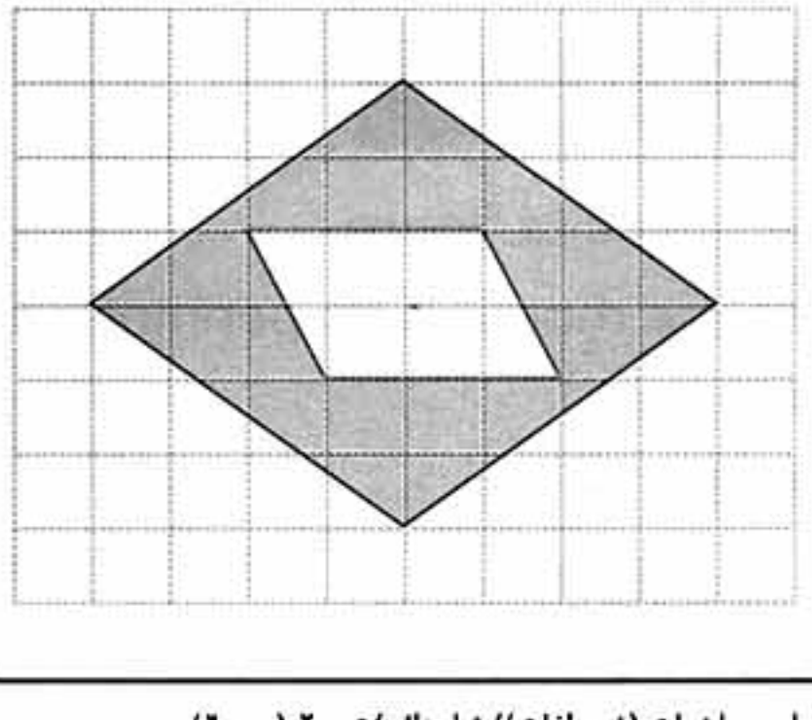


23 Calculate the area of the coloured region :

(a)

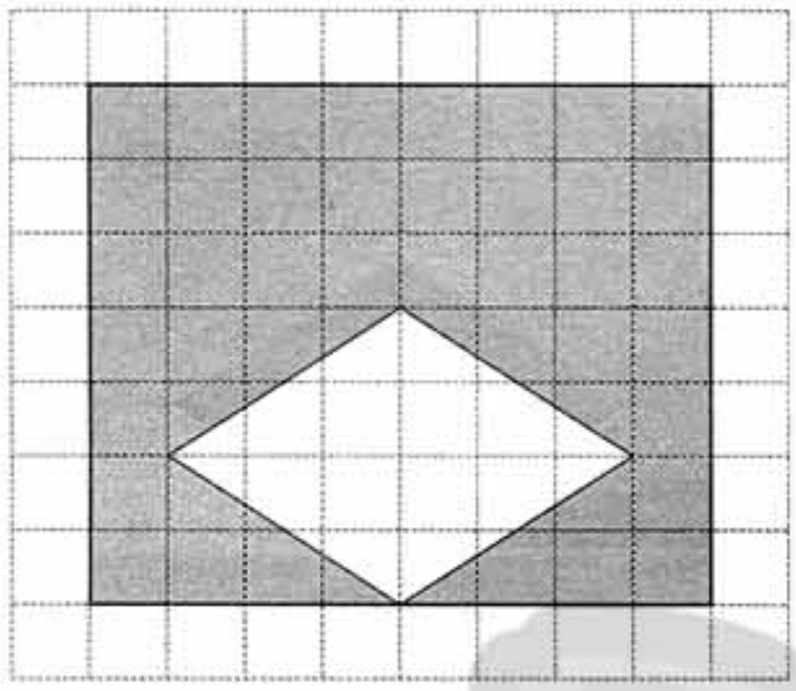


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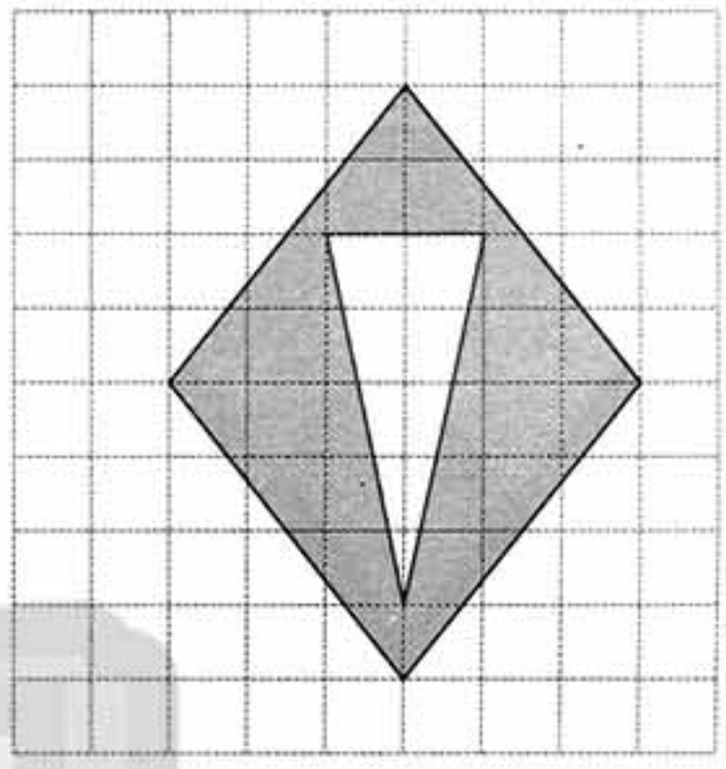


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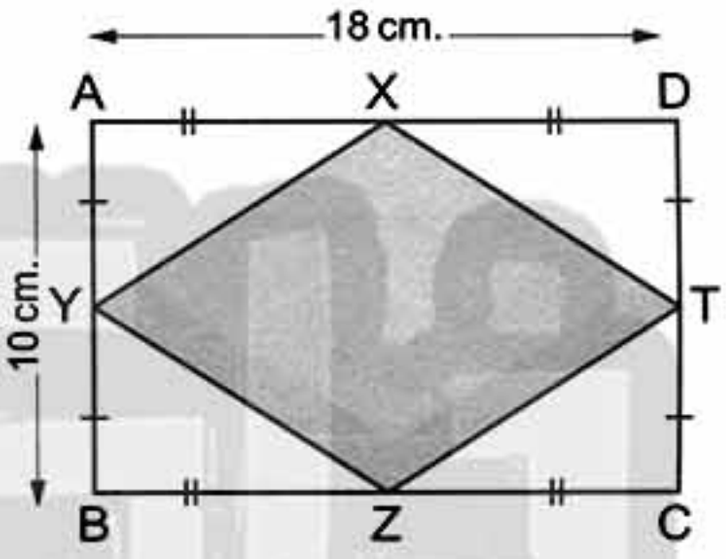
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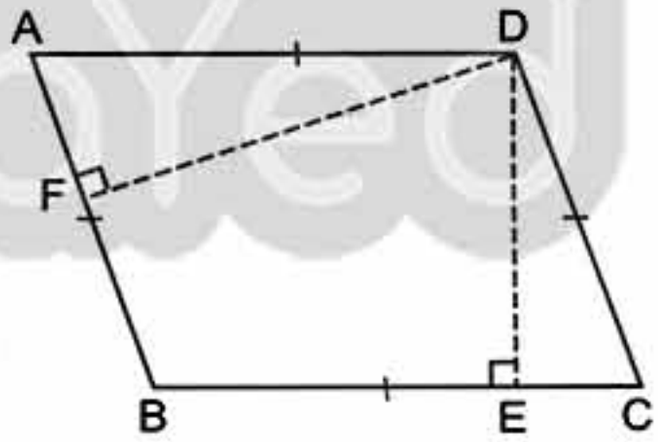
24 In the opposite figure :
ABCD is a rectangle
and XYZT is a rhombus.
If AB = 10 cm. , AD = 18 cm. ,
Find the area of the rhombus
XYZT



25 🕮 In the opposite figure , find :

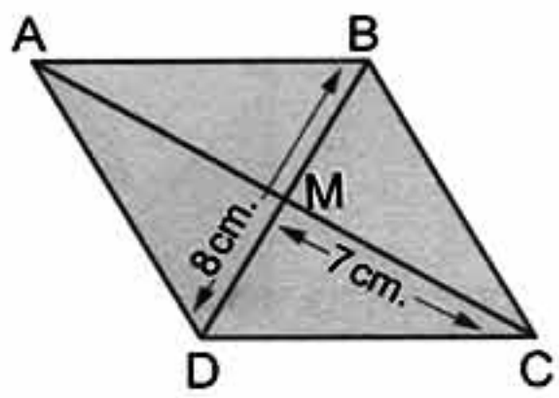
(a) The area of the rhombus ABCD , whose side length is 10 cm. and diagonal lengths are 16 cm. and 12 cm.

(b) The length of $\overline{DE}$, and $\overline{DF}$.
What can you say about the heights of rhombus ?





26 In the opposite figure :
ABCD is a rhombus its perimeter is 32 cm.
If BD = 8 cm.
and CM = 7 cm. ,
Find its height.



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Lesson 5 Circumference of a circle

Circumference is the length of the curved line that represents the circle

You can use string and a ruler to estimate the circumference of a circle.





1. Use a compass to draw a circle. Mark its center. Use a ruler to draw a diameter of the circle. Remember that the diameter passes through the center of the circle.
2. Measure the diameter of the circle to the nearest tenth of a centimeter. Record your measurement.
3. Lay the string around the circle. Mark the string where it meets itself.
4. Use the ruler to measure the string from its end to the mark you made. Measure to the nearest tenth of a centimeter. Record your measurement.
5. Use a calculator to divide the circumference of your circle by the diameter length. Record your result.
6. Display your results on the white - board with those of other students in the class by making a table like the one below.

Student Name	Circumference (C)	Diameter length (d)	C ÷ d

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Unit Three

You will find that the value of the circumference divided by the diameter length is a little more than 3 for any circle.

i.e. For any circle , the circumference divided by its diameter length is the same. This number is called pie and denoted by π

The value of π is usually approximated as 3.14 or $\frac{22}{7}$ and known as approximate value. The relationship among circumference , diameter length and π can be written as $\boxed{\frac{C}{d} = \pi}$, where "C" is the circumference of the circle and "d" is the diameter length of the circle.

Since "$\frac{C}{d} = \pi$" , you can get the formula $\boxed{C = \pi\, d}$ Since the diameter length of a circle is twice the length of the radius (r) ***i.e.*** $d = 2r$, you can also write :

$C = \pi \times 2r$, $C = 2\,\pi\, r$

Remember that :

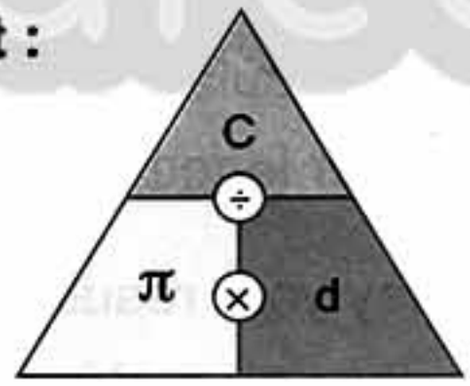
Radius is a line segment that joins any point on the circle and its centre.

So , you can find the circumference of any circle by using the formula :

$\boxed{C = \pi\, d}$ or $\boxed{C = 2\,\pi\, r}$

Notice that :

[a] Using the opposite diagram , we note that :

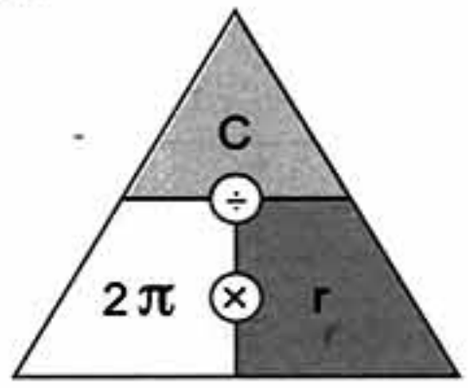


[1] $C = \pi \times d$

[2] $d = \frac{C}{\pi}$

[3] $\pi = \frac{C}{d}$

[b] Using the opposite diagram , we note that :



[1] $C = 2\,\pi \times r$

[2] $r = \frac{C}{2\,\pi}$

[3] $\pi = \frac{C}{2\,r}$

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Lesson Five

Example 1

[a] Find the circumference of a circle with a diameter of 21 cm. long ($\pi = \frac{22}{7}$)

[b] Find the circumference of a circle of radius length 10 cm. (π = 3.14)

Solution

[a] $C = \pi \times d = \frac{22}{7} \times 21 = 66$ cm.

[b] $C = 2\pi r = 2 \times 3.14 \times 10 = 62.8$ cm.

Example 2

Find the length of the radius of a circle if its circumference is 47.1 cm. (π = 3.14)

Solution $r = \frac{C}{2\pi} = \frac{47.1}{2 \times 3.14} = 7.5$ cm.

Try by yourself

Complete the following table :

Radius length	Diameter length	π	Circumference
14 cm.	 cm.	$\frac{22}{7}$	 cm.
..... cm.	6 cm.	3.14	 cm.
..... dm.	 dm.	$\frac{22}{7}$	110 dm.

Remember that :

- The perimeter of the square = the side length × 4
- The perimeter of the rectangle = (length + width) × 2

Example 3

Which is greater :

The perimeter of a rectangle of dimensions 7 cm. and 8 cm.
or the circumference of a circle of radius length 14 cm. ($\pi = \frac{22}{7}$)

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Unit Three

Solution

• The perimeter of the rectangle = (length + width) × 2

= (8 + 7) × 2 = 15 × 2 = 30 cm.

• The circumference of the circle = 2 π r = 2 × $\frac{22}{7}$ × 14 = 88 cm.

Therefore : the circumference of the circle is greater than the perimeter of the rectangle.

Example 4

Find the circumference of a circle whose radius length equals the side length of the square whose perimeter is 56 cm. (π = $\frac{22}{7}$)

Solution

• The side length of the square = $\frac{\text{the perimeter of the square}}{4}$ = $\frac{56}{4}$ = 14 cm.

• The radius length of the circle = the side length of the square.

• The circumference of the circle = 2 π r = 2 × $\frac{22}{7}$ × 14 = 88 cm.

Example 5

The radius length of the tyre of Hazem's bicycle is 49 cm. Find the distance covered when the tyre of the bicycle makes 8 complete rotations. (π = $\frac{22}{7}$)



Solution

• The circumference of the tyre = 2 π r = 2 × $\frac{22}{7}$ × 49 = 308 cm.

, then the covered distance = 8 × 308 = 2464 cm. = 24.64 m.

Remember that :

The perimeter of any shape = the length of the outline of the shape

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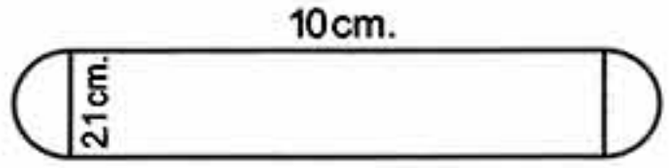
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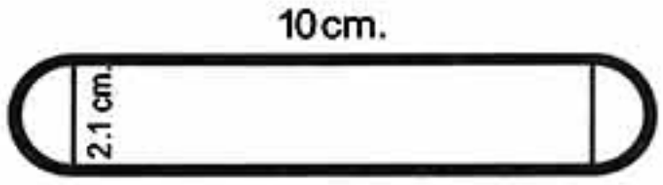
Example 6

Calculate the perimeter of the opposite figure ($\pi = \frac{22}{7}$)



Solution

The perimeter of the figure equals the length of the red outline which consists of two parts :



[1] The length of the two opposite sides of the rectangle.

[2] Two semicircles which make a complete circle of diameter length 2.1 cm.

So , the length of the two opposite sides = 10 + 10 = 20 cm.

And the circumference of the circle = $\pi \times d = \frac{22}{7} \times 2.1 = 6.6$ cm.

Therefore, the perimeter = 20 + 6.6 = 26.6 cm.

Try by yourself

Calculate the perimeter of the opposite figure ($\pi = \frac{22}{7}$).

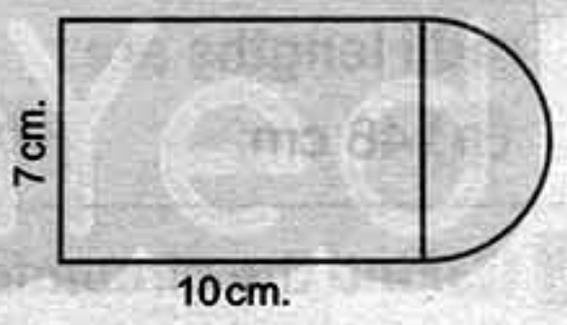
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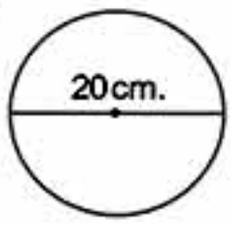
Unit Three

From the school book

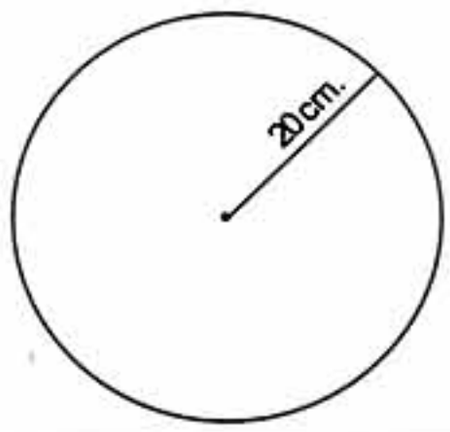
Exercise 5 Circumference of a circle

1 Find each circumference of the following : "$\pi = 3.14$"

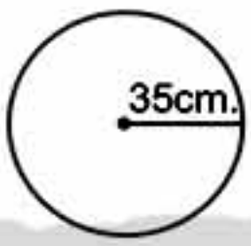
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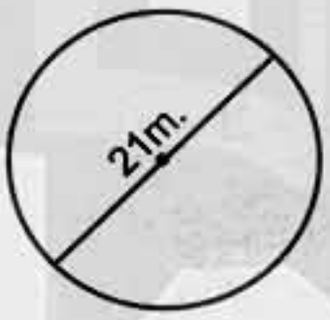
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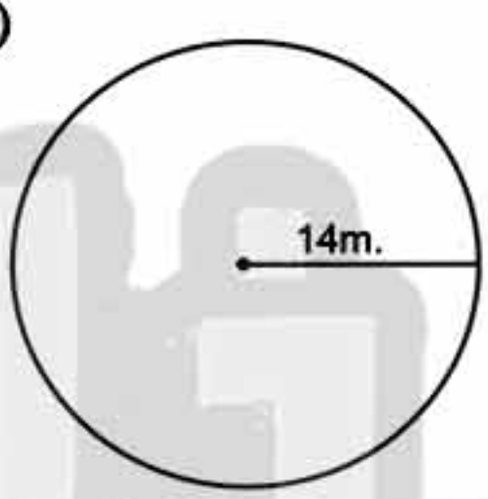
(d) 

2 Find each circumference of the following : "$\pi = \frac{22}{7}$"

(a) 

(b) 

(c) 

(d) 

3 Find the circumference of the following circles whose radii lengths are : "$\pi = \frac{22}{7}$"

(a) 48 cm. (b) 14 cm. (c) $10\frac{1}{2}$ cm. (d) 3.5 cm.

4 Find the circumference of the following circles whose diameters lengths are : "$\pi = 3.14$"

(a) 10 cm. (b) 100 cm. (c) 50 cm.

5 Find the circumference of a circle whose diameter length is 15.4 cm. to the nearest hundredth. (where "$\pi = 3.14$")

6 Find the circumference of a circle with a radius of 42 cm. long to the nearest metre. "$\pi = \frac{22}{7}$"

7 Calculate the radius length of each of the following circles whose circumferences are :

(a) 88 cm. ($\pi = \frac{22}{7}$)

(b) 36.11 cm. ($\pi = 3.14$)

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Lesson Five

8 A circle is of circumference 66 cm. Find the length of its diameter. "$\pi = \frac{22}{7}$"

9 If half the circumference of a circle equals 314 cm. , find its diameter length in metres." π = 3.14 "

10 🕮 **Complete the table :**

Radius length	Diameter length	π	Circumference
7 cm.	 cm.	$\frac{22}{7}$	 cm.
..... cm.	20 cm.	3.14	
..... cm.	 cm.	3.14	75.36 cm.
..... mm.	98 mm.	$\frac{22}{7}$	 mm.

11 **Which is longer :**
The circumference of the circle of radius length 7.7 cm. or the perimeter of the rectangle of dimensions 5.3 cm. and 4.8 cm. ? ($\pi = \frac{22}{7}$)

12 Find the difference between the circumferences of two circles whose two radii lengths are 14 cm. and 9.8 cm. ($\pi = \frac{22}{7}$)

13 🕮 Two circles in which the diameter length of the first one is 20 cm. and for the other one is 40 cm. Find the difference between their circumferences. (π = 3.14)

14 **Complete :**

(a) The diameter length = 2 ×

(b) If the radius of a circle = 5 cm. long, then the length of the longest chord = ... cm.

(c) If the length of the longest chord in a circle = 7 cm., then its circumference = ... cm. where ($\pi = \frac{22}{7}$)

(d) If the radius length of a circle = x cm. , then its circumference equals cm.

(e) If the circumference of a circle is 10 π cm., then its radius length is cm.

(f) If half of the circumference of a circle is 157 cm., then its diameter length is cm. (π = 3.14)

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Unit Three

15 Choose the correct answer from the given ones :

(a) The circumference of a circle = ...

($2\pi r$ *or* πr *or* $4\pi r$ *or* $2\pi d$)

(b) The circumference of the circle with diameter of length 7 cm.

equals cm. ($\pi = \frac{22}{7}$) (22 *or* 44 *or* 66 *or* 88)

(c) The diameter length of the circle whose radius length 4 cm.

equals cm. (2 *or* 4 *or* 6 *or* 8)

(d) If the circumference of a circle is 44 cm. , then its diameter length is cm. ($\pi = \frac{22}{7}$) (28 *or* 14 *or* 7 *or* 9)

(e) The circumference of a circle ÷ r = ...

(π *or* 2π *or* $\frac{\pi}{2}$ *or* $\frac{1}{2}$)

(f) Twice the circumference of a circle with radius r cm. long = ...

(πr *or* $2\pi r$ *or* $3\pi r$ *or* $4\pi r$)

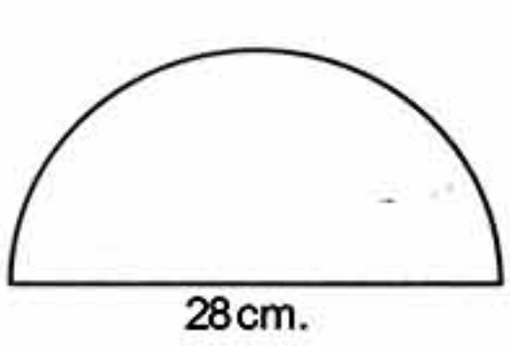
(g) π = ... ($\frac{\text{circumference}}{r}$ *or* $\frac{\text{circumference}}{2r}$ *or* $\frac{2\text{ circumference}}{r}$ *or* $\frac{\text{circumference}}{3r}$)

(h) If half the circumference of a circle is 25.12 cm., then the length of its radius = ... cm.($\pi = 3.14$) (2 *or* 4 *or* 8 *or* 16)

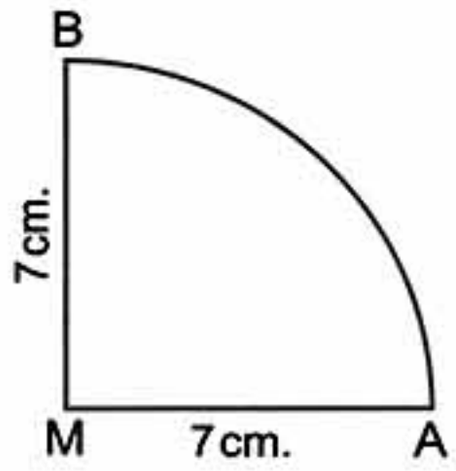
(i) If the radius length of a circle is 20 cm., then its circumference = ... cm. (10π *or* 20π *or* 40π *or* 80π)

16 Calculate the perimeter of each of the following figures where. "$\pi = \frac{22}{7}$"

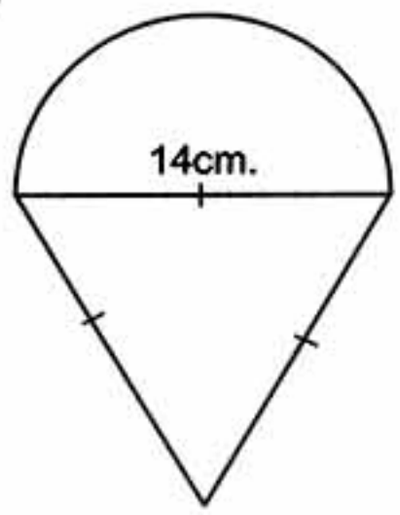
(a)



(b)



(c)



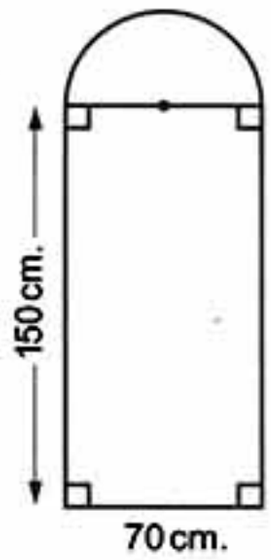
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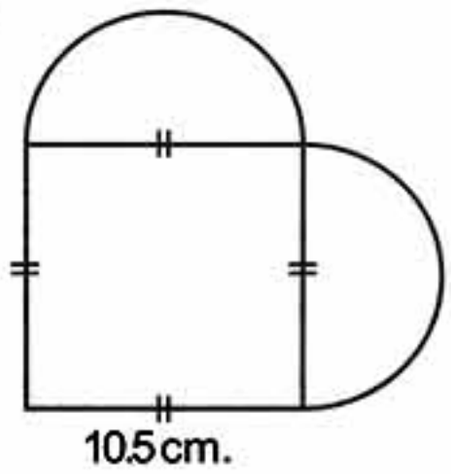


Lesson Five

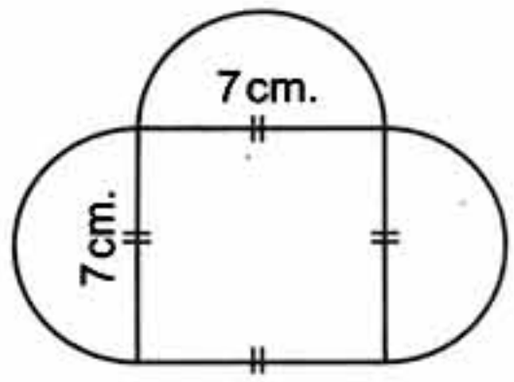
(d) 📖



(e)

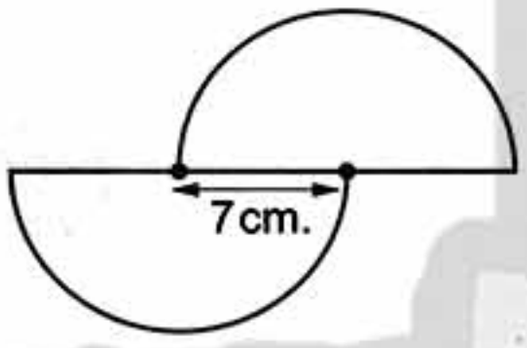


(f)

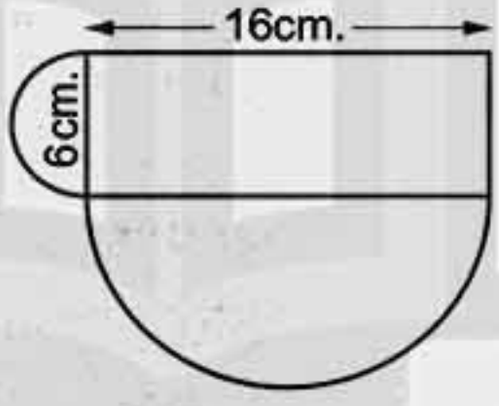


17 Calculate the perimeter of each of the following figures where " $\pi = 3.14$ " :

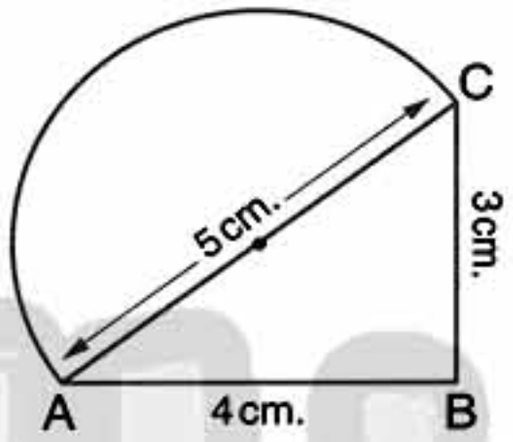
(a)



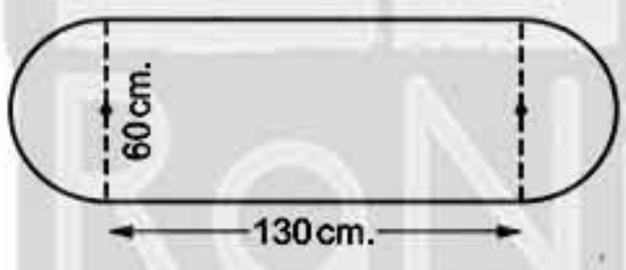
(b)



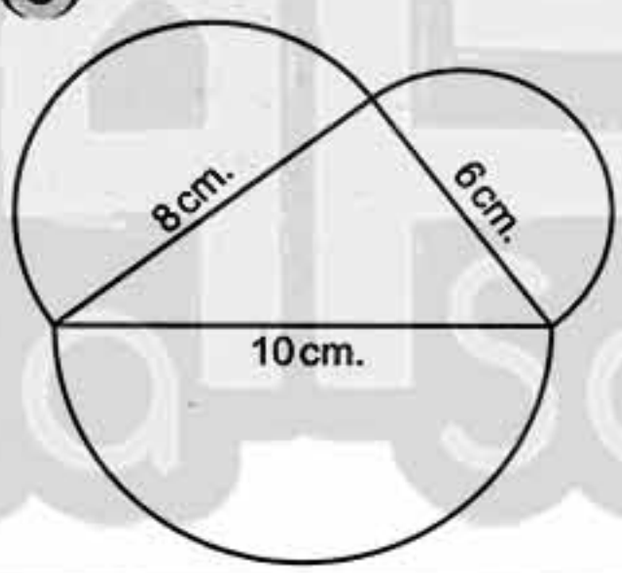
(c)



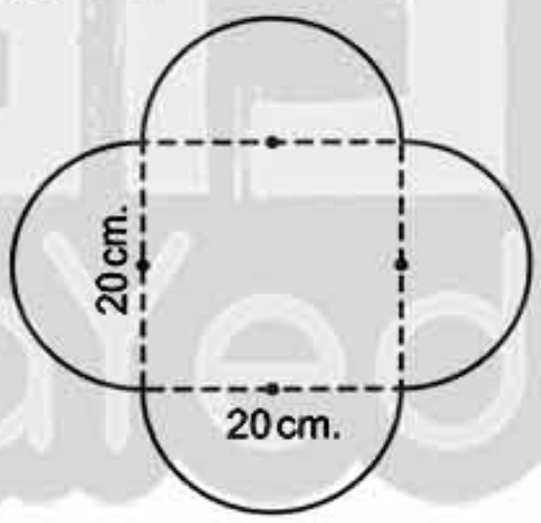
(d) 📖



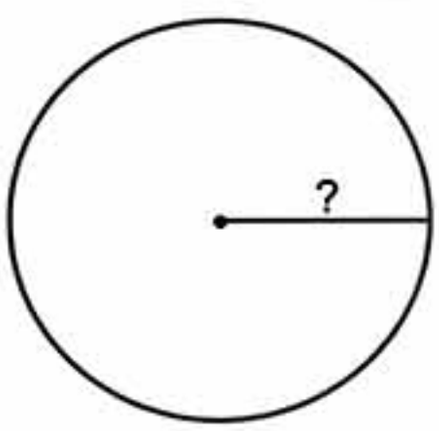
(e)

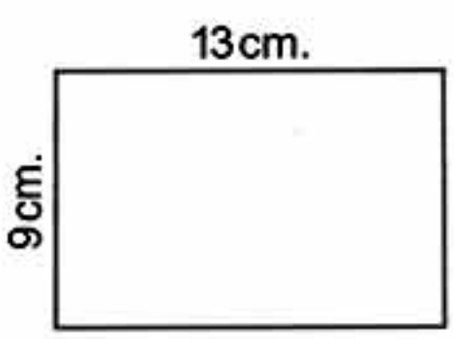


(f) 📖



18 Find the radius length of the circle , whose circumference is equal to the perimeter of a rectangle whose dimensions are 13 cm. and 9 cm. " $\pi = \frac{22}{7}$ "





19 If the perimeter of a square is twice the circumference of a circle , where the side length of the square is 22 cm. , find the length of the diameter of the circle.

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Unit Three

20 If the circumference of a circle is 3 times the perimeter of a square , where the radius of the circle is 10.5 cm. long , find the side length of the square. " $\pi = \frac{22}{7}$ "

21 🕮 If the wheel's diameter length is 66 cm.
What is the distance that the bike covers if the wheels turns 1000 rounds. (π = 3.14)



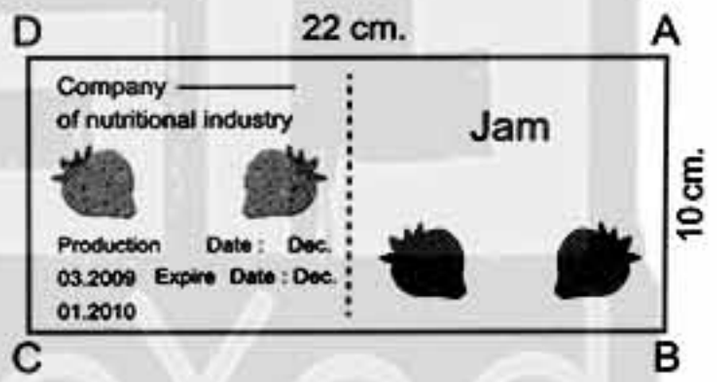
22 🕮 A wheel of a bicycle has a diameter length 56 cm. Find the covered distance when compeleting one turn. How many turns should be done to cover a distance of 352 m. ?



23 🕮 A jam jar has the form of a cylinder. Its flat base is a circle with diameter length 3.5 cm.
Find the circumference of its flat base.



24 🕮 A piece of paper has the form of a rectangle with dimensions 10 cm. and 22 cm. is sticked down on the curved surface of the jam jar, where $\overline{AB}$ coincides of $\overline{DC}$.

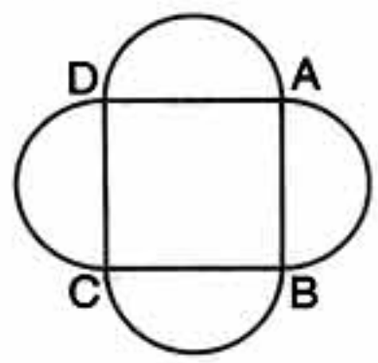


(a) The height of the jam jar = ... cm.

(b) The circumference of the flat base = ... cm.

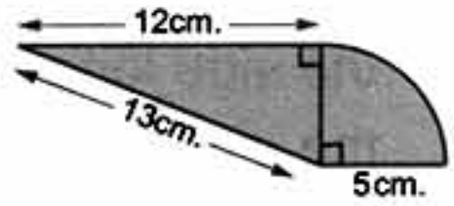
(c) Find the radius length of the flat base where " $\pi = \frac{22}{7}$ ".

25 The opposite figure represents a garden.
If one metre of making a fence costs L.E. 75 , find the cost of making a fence around the garden given that ABCD is a square of side length 10.5 metres. " $\pi = \frac{22}{7}$ "



26 Complete :

(a) The opposite figure is made up of a quarter of a circle surface and a triangle , then its perimeter equals cm. (π = 3.14)

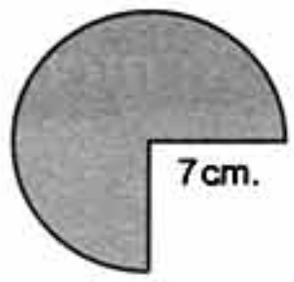


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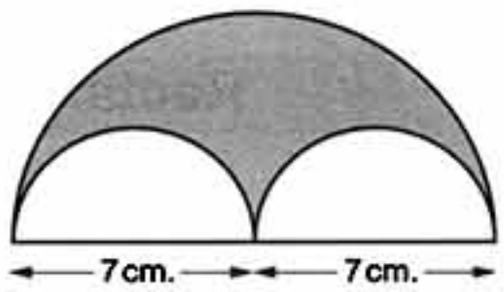


Lesson Five

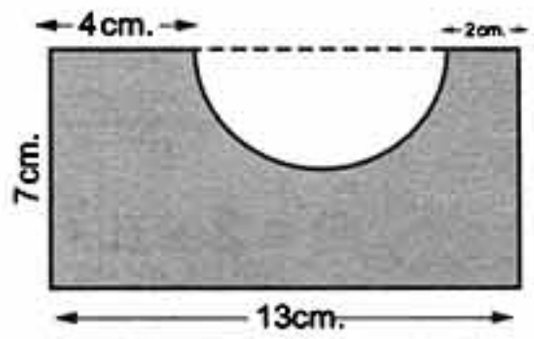
(b) The perimeter of the opposite figure
= cm. "$\pi = \frac{22}{7}$"



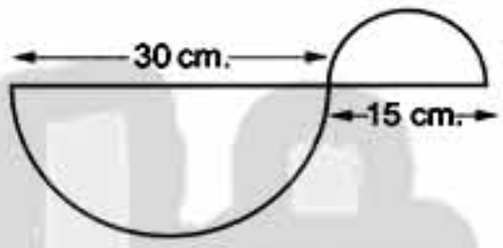
(c) The perimeter of the coloured part
= cm. "$\pi = \frac{22}{7}$"



(d) The perimeter of the coloured part
= cm." $\pi = \frac{22}{7}$"



(e) A piece of wire is bent to form a shape as shown in the opposite figure, the total length of the piece of wire equals cm. (π = 3.14)

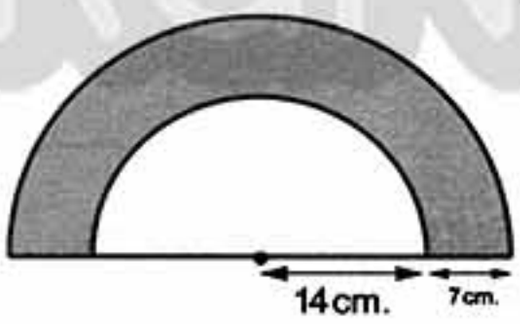




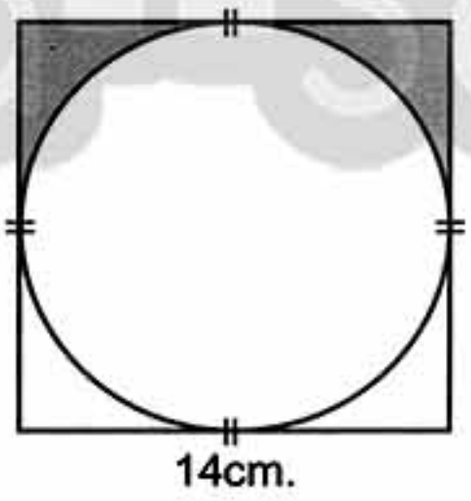
Challenge

27 In each of the following figures , find the perimeter of the coloured part "$\pi = \frac{22}{7}$" :

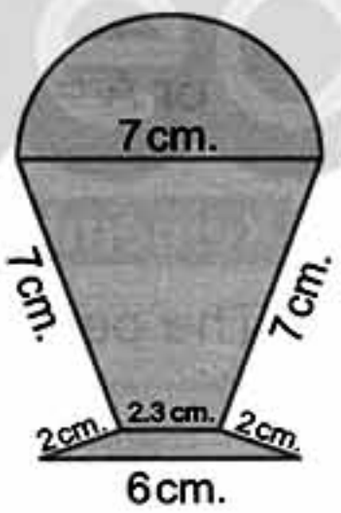
(a)



(b)



(c)



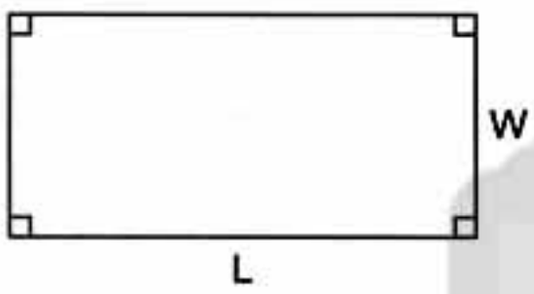
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Unit Three

Remember that :

Formulas for perimeter (P) and area (A)

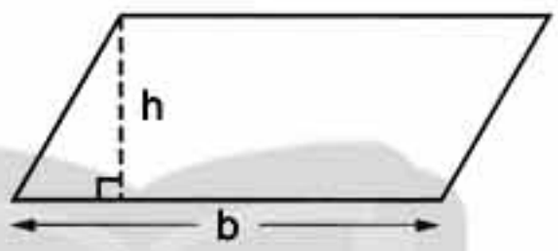
(a) Rectangle



$P = 2 \times (L + W)$

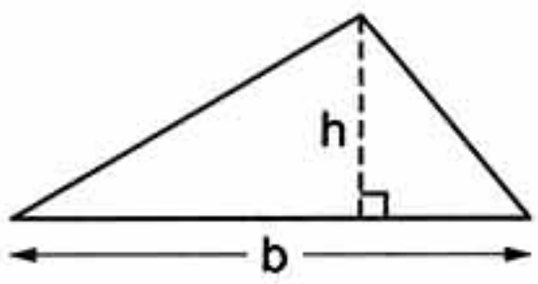
$A = L \times W$

(b) Parallelogram



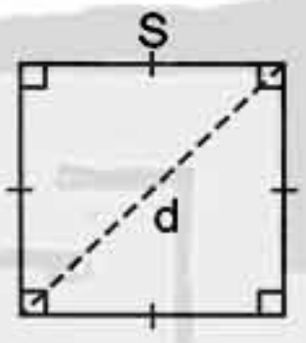
$A = b \times h$

(c) Triangle



$A = \frac{1}{2} \times b \times h$

(d) Square

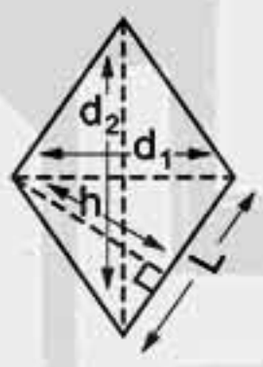


$P = 4 \times S$

$A = S \times S$

or $A = \frac{1}{2} \times d \times d$

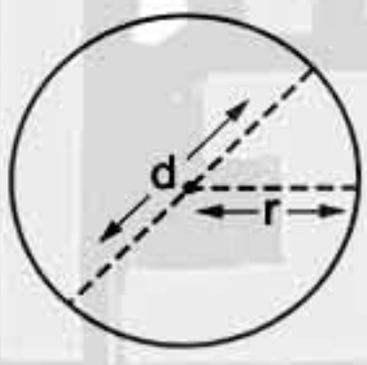
(e) Rhombus



$A = L \times h$

or $A = \frac{1}{2} \times d_1 \times d_2$

(f) Circle



$C = 2 \times \pi \times r$

or $C = d \times \pi$

Remember that :

The perimeter of any polygon = the sum of lengths of its sides.

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General exercise on unit three from the school book

First Completion questions

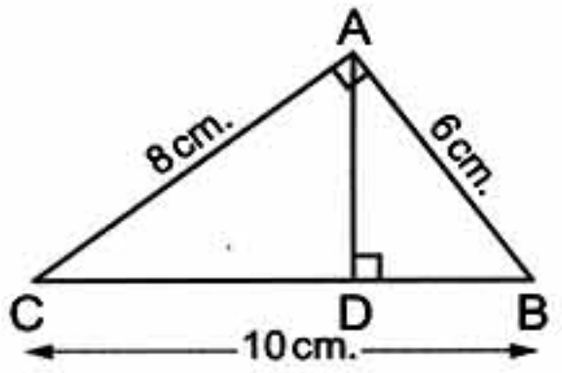
Complete each of the following to get a correct statement :

1. The circle whose diameter length is 14 cm. , $(\pi = \frac{22}{7})$ its circumference = ... cm.
2. The area of the triangle whose base length is 12 cm. and its height 5 cm. = ... cm^2.
3. The area of the rhombus whose side length = 10 cm. and its height is 9.6 cm. equals cm^2.
4. The rhombus whose area is 36 cm^2. and the length of one of its diagonals is 8 cm. , then the length of the other diagonal = ... cm.
5. The square whose area is 24.5 cm^2., the length of its diagonal = ... cm.
6. A rhombus has two diagonals of lengths 6 cm. and 8 cm. , then its area = ... cm^2.
7. $\frac{\text{The circumference of the circle}}{\text{The length of its diameter}}$ = ...
8. A rhombus of area 48 cm^2. , its height = 4.8 cm. , then its perimeter = ... cm.
9. The length of the diagonal of the square whose area = 18 cm^2. is cm.
10. The number of the altitudes of the parallelogram is
11. The radius length of the circle whose circumference is 62.8 cm. = ... cm. ($\pi = 3.14$)
12. The length of the diagonal of a square is 12 cm. , then its area = ... cm^2.
13. The square whose perimeter is 16 cm. , its area = ... cm^2.
14. The square whose area is 72 cm^2. , the length of its diagonal = ... cm.

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15 **In the opposite figure :**



ABC is a right-angled triangle at A

AB = 6 cm. , AC = 8 cm. , BC = 10 cm.

$\overline{AD} \perp \overline{BC}$ Complete :

(a) The area of Δ ABC = $\frac{1}{2}$ × 8 ×

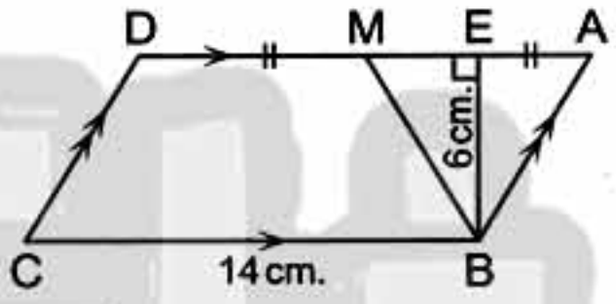
= cm^2.

(b) The area of Δ ABC = $\frac{1}{2}$ × × AD

= cm^2.

∴ AD = ... cm.

16 **In the opposite figure :**



ABCD is a parallelogram in which

BC = 14 cm.

BE = 6 cm. , M is the midpoint of $\overline{AD}$ Complete :

(a) AD = ... cm.

(b) AM = ... cm.

(c) The area of $\square$ ABCD = ... cm^2.

(d) The area of Δ ABM = ... cm^2.

(e) The area of the figure MBCD = ... cm^2.

Second Multiple - choices questions :

Choose the correct answer from those given between brackets :

1. The area of the rhombus whose diagonals are of lengths 12 cm. and 16 cm. = ... cm^2. (56 *or* 28 *or* 96 *or* 192)

2. The area of the triangle which the length of its base is 12 cm. and its height = 5 cm. is cm^2. (30 *or* 60 *or* 17 *or* 34)

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General exercise

3 The square whose diagonal length = 8 cm. , its area cm^2.

(64 *or* 32 *or* 16 *or* 8)

4 If the lengths of two adjacent sides in a parallelogram are 5 cm. and 7 cm. , its smaller height = 3 cm. , then its area = ... cm^2.

(15 *or* 21 *or* 36 *or* 9)

5 The parallelogram whose area is 36 cm^2. and the length of a side of it = 9 cm. , then the corresponding height to this side = ... long.

(18 *or* 4 *or* 27 *or* 45)

6 The area of a rhombus is 30 cm^2. and the length of one of its diagonals 6 cm. , then the length of the other diagonal is cm.

(4 *or* 6 *or* 8 *or* 10)

7 The perimeter of the square whose area is 25 cm^2. equals cm.

(100 *or* 50 *or* 20 *or* 25)

8 The length of the base of a triangle whose area is 240 cm^2. and its height = 10 cm. is cm. (24 *or* 12 *or* 48 *or* 2400)

9 The circle whose the length of the greatest chords is 7 cm. , its perimeter = ... cm. $(\pi = \frac{22}{7})$ (3.5 *or* 7 *or* 22 *or* 44)

10 The radius of the circle whose perimeter is 88 cm. equals cm.

(7 *or* 14 *or* 28 *or* 56)

11 The perimeter of a rectangle is 16 cm. and its width is 3 cm. , then its area = ... cm^2. (15 *or* 39 *or* 48 *or* 24)

12 The area of the largest rectangle whose perimeter is 24 cm. = ... cm^2. (32 *or* 36 *or* 72 *or* 144)

13 The perimeter of a rhombus is 20 cm. and its height is 6 cm. , then its area = ... cm^2. (30 *or* 120 *or* 24 *or* 26)

14 The base length of a triangle is 8 cm. and its height is 5 cm. , then its area = ... cm^2. (9 *or* 40 *or* 8 *or* 20)

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Unit Three

Third Essay questions :

Answer the following questions :

1 **Which is greater in area :**

A rhombus in which the lengths of its diagonals are 6 cm. and 8 cm. or a square in which the diagonal length = 8 cm.

2 **Which is greater in area :**

A square whose diagonal is 10 cm. long or the right-angled triangle in which the lengths of the sides of the right angle are 8 cm. and 15 cm.

3 **The area of a rectangle equals the area of a square which its diagonal = 12 cm. long , Find the perimeter of the rectangle if its width = 8 cm. long.**

4 **A rhombus in which the lengths of its diagonals are 12 cm. , 16 cm. and its height is 9.6 cm. Calculate :**

(a) The area of the rhombus.

(b) Its side length.

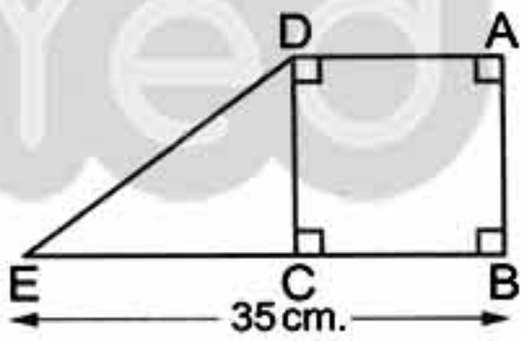
(c) Its perimeter.

5 **If the length of the wheel a bicycle is 50 cm. what is the distance covered by the bicycle in metre if it turns 1200 times ($\pi = 3.14$).**

6 **In the opposite figure :**

ABCD is a square , its perimeter is 60 cm. , $E \in \overrightarrow{BC}$, BE = 35 cm.

Find the area of the figure ABED



7 **In the opposite figure :**

ABCD is a parallelogram in which AD = 24 cm. , E is the midpoint of $\overline{AD}$

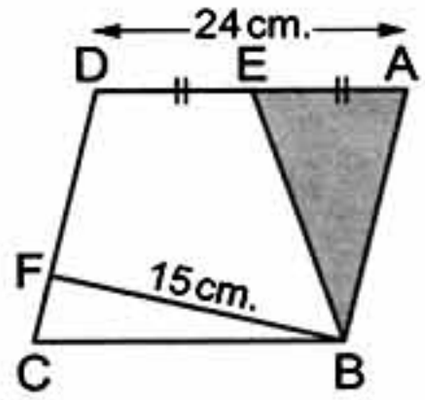
BF = 15 cm. , The area of Δ ABE = 78 cm^2

Find :

(a) The area of the parallelogram ABCD

(b) The length of $\overline{AB}$

(c) The perimeter of the parallelogram ABCD



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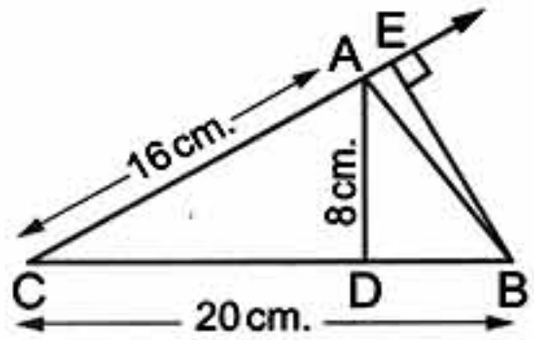


General exercise

8 In the opposite figure :

ΔABC , $\overline{AD} \perp \overline{BC}$, $\overline{BE} \perp \overleftrightarrow{AC}$

BC = 20 cm. , AC = 16 cm. , AD = 8 cm.



Find :

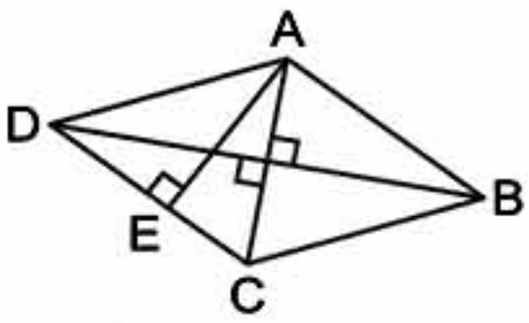
(a) The area of ΔABC

(b) The length of $\overline{BE}$

9 In the opposite figure :

ABCD is a rhombus , its perimeter = 40 cm.

The lengths of its diagonals are 12 cm. and 16 cm.



Find :

(a) The side length of the rhombus.

(b) The area of the rhombus.

(c) The height of the rhombus.

Rania Sayed

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Test on Unit Three



1 Choose the correct answer :

(1) The area of a rhombus whose diagonals lengths are 10 cm. and 20 cm. is cm^2

(200 *or* 400 *or* 300 *or* 100)

(2) If the longest chord in a circle is 7 cm., then the circumference of the circle = ... cm. ($\pi = \frac{22}{7}$)

(3.5 *or* 7 *or* 22 *or* 44)

(3) The area of the square whose diagonal length is 6 cm. = ... cm^2

(36 *or* 18 *or* 12 *or* 24)

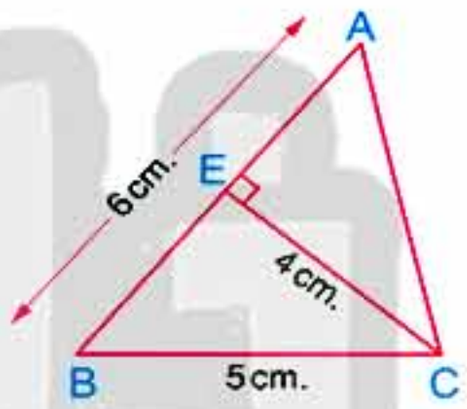
(4) **In the opposite figure :**

ABC is a triangle , $\overline{CE} \perp \overline{AB}$,

if AB = 6 cm. , BC = 5 cm.

and CE = 4 cm.

, then area of Δ ABC = ... cm^2



(10 *or* 12 *or* 20 *or* 24)

(5) A parallelogram in which the lengths of two adjacent sides are 4 cm. and 6 cm. and its smaller height is 5 cm. , then its area = ... cm^2

(20 *or* 30 *or* 10 *or* 15)

(6) A triangle whose area = 120 cm^2 , and its height = 10 cm. , then its base length = ... cm.

(12 *or* 18 *or* 24 *or* 10)

(7) A circumference of a circle is 31.4 cm. , then its radius length = ... cm. where π = 3.14

(5 *or* 10 *or* 20 *or* 15)

(8) A parallelogram of area 36 dm^2 and the length of its base is 4 dm. , then the corresponding height of its base = ... dm.

(18 *or* 8 *or* 12 *or* 9)

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(9) If the area of a square is 8 cm^2 , then its diagonal length = ... cm.

(4 **or** 16 **or** 64 **or** 32)

(10) Number of altitudes of a triangle is (0 **or** 1 **or** 2 **or** 3)

2 Complete each of the following :

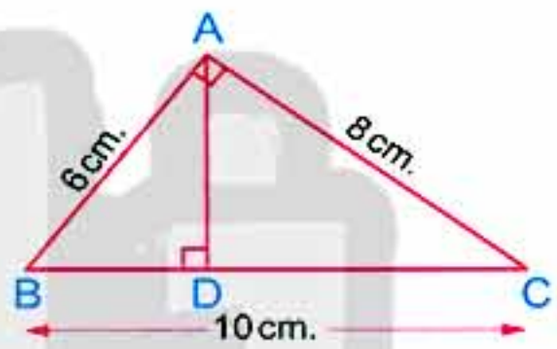
(11) The square whose perimeter is 32 cm. , its area = ... cm^2

(12) A rhombus of area 48 cm^2 , its height is 4.8 cm. , then its perimeter = ... cm.

(13) The circumference of the circle whose radius length is 5 cm.
= π cm.

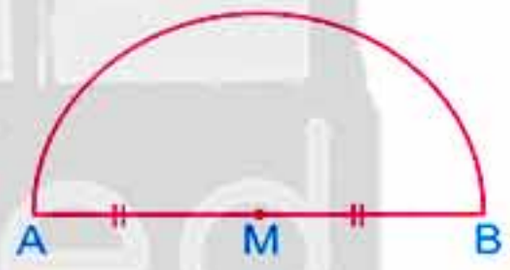
(14) **In the opposite figure :**

ABC is a right-angled triangle where
AB = 6 cm. , AC = 8 cm. and BC = 10 cm.
, then the length of $\overline{AD}$ = ... cm.



(15) **In the opposite figure :**

The length of the diameter $\overline{AB}$ of
a semicircle is 12 cm., then the perimeter
of the figure = ... cm. (π = 3.14)



(16) The area of a rhombus is 30 cm^2 and the length of one of its diagonals is 6 cm. , then the length of the other diagonal is cm.

3 Answer the following :

(17) Which is greater is area : a rhombus whose diagonals lengths are 6 cm. and 8 cm. or a square whose diagonal length is 8 cm. ?

.....

.....

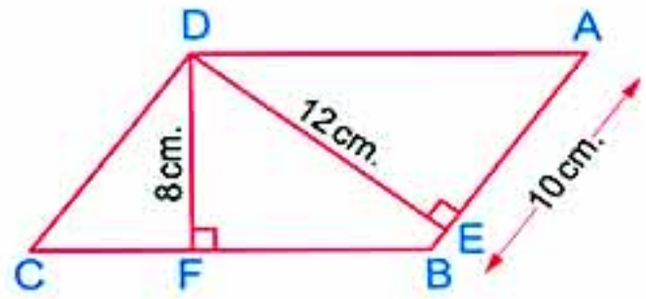
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(18) In the opposite figure :

ABCD is a parallelogram in which

AB = 10 cm. , DE = 12 cm. , DF = 8 cm.



Find : (1) The area of the parallelogram ABCD

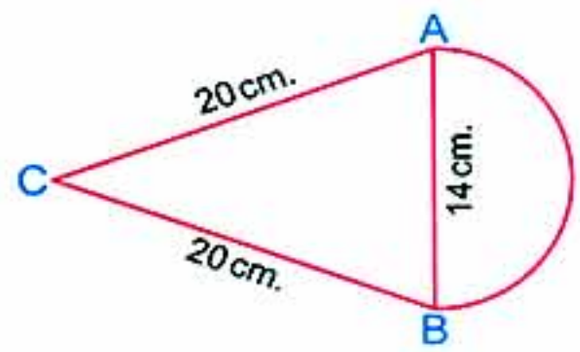
(2) The length of $\overline{BC}$

.....

.....

(19) Calculate the perimeter

of the opposite figure ($\pi = \frac{22}{7}$)



.....

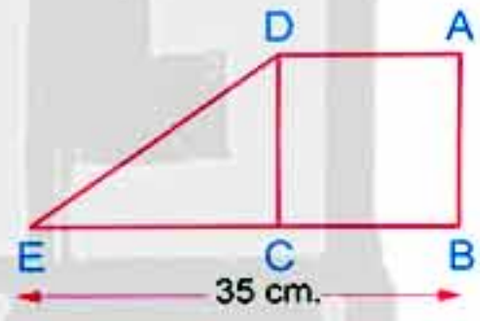
.....

(20) In the opposite figure :

ABCD is a square of side length 15 cm.

, $E \in \overrightarrow{BC}$, BE = 35 cm.

Find the area of the figure ABED



.....

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Unit Four

Geometric Transformations

Lesson 1 : Geometric transformations – Symmetrical figures and axis of Symmetry

Lesson 2 : Reflection.

RaNia SaYed



A general exercise from the school book is given at the end of the unit.

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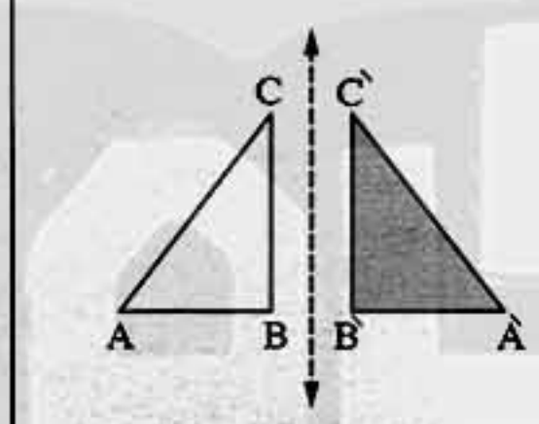
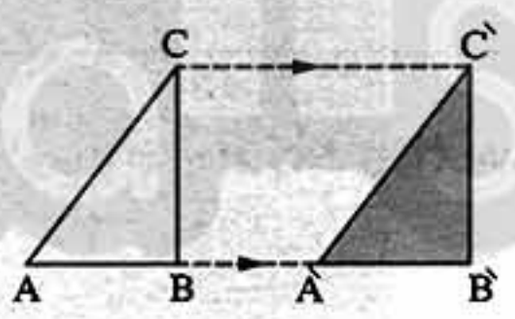
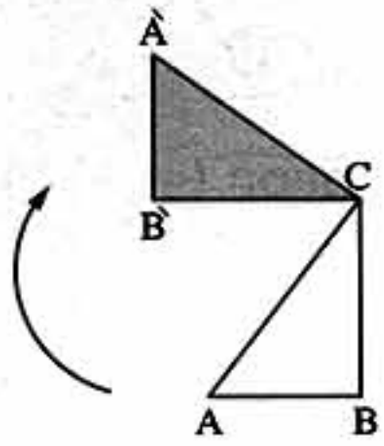
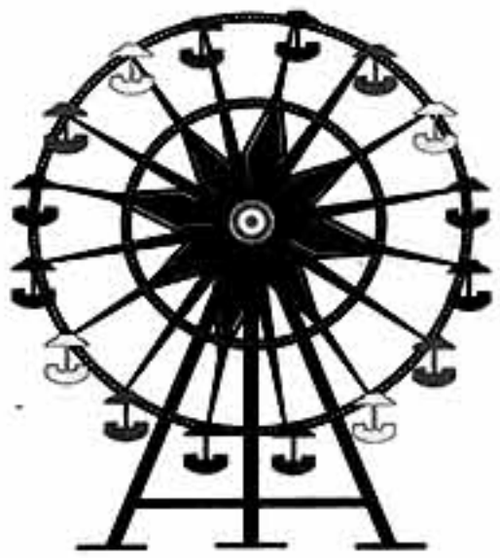
Lesson 1 Geometric transformations - Symmetrical figures and axis of Symmetry

Geometric transformations

- Geometric transformations change the position of a figure, that means the figure is moving from one place to another.

i.e. A geometric transformation transforms every point A in the plane to another point Ȧ in the plane itself.

- There are three basic geometric transformations :

Geometric transformations	For example	Example from our life
[1] Reflection (flip) : Reflection is a over a line.		
[2] Translation (slide) : Translation is moving in a certain direction along a line.		
[3] Rotation (turn) : Rotation is turning the figure around a point with a certain angle.		

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Unit Four

Optical Illusions



What do you see ?!!

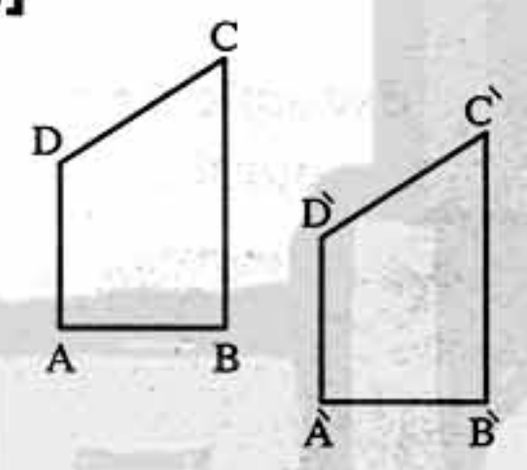


Turn the book to the opposite side, what will you see ?!!

Example 1

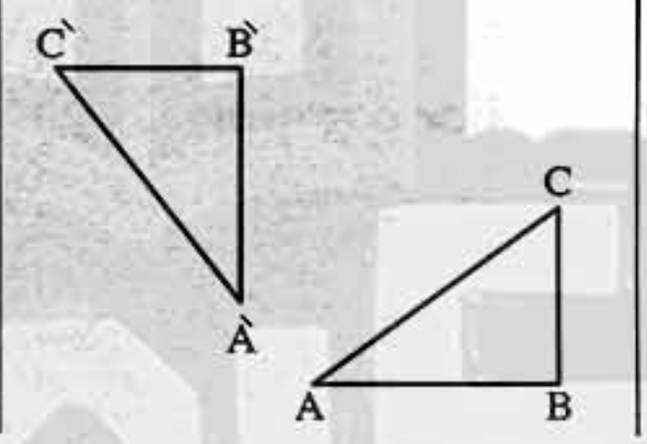
Describe the type of transformation in each of the following figures (reflection , translation or rotation) :

[a]



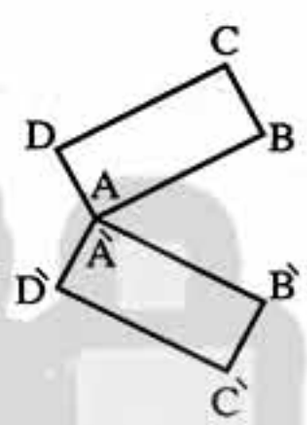
.....

[b]



.....

[c]



.....

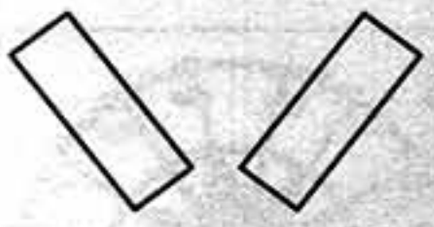
Solution

[a] Translation. **[b]** Rotation. **[c]** Reflection.

Try by yourself

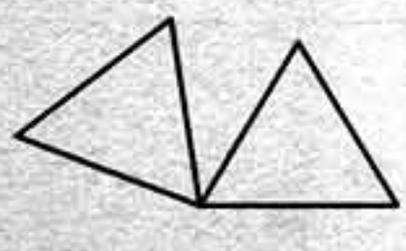
Read the description of how the figure has been moved. Write true or false :

[a]



translation (.....)

[b]



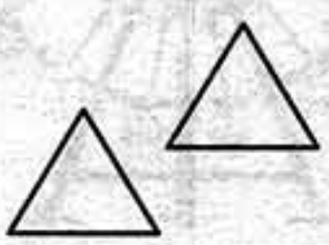
rotation (.....)

[c]



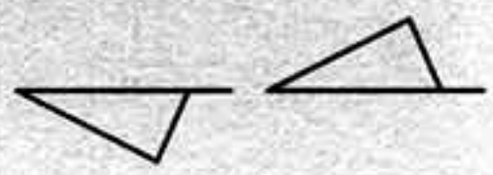
reflection (.....)

[d]



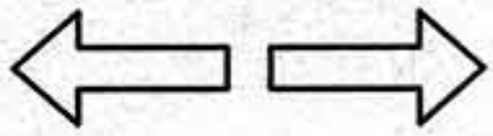
translation (.....)

[e]



rotation (.....)

[f]



reflection (.....)

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Lesson One

Symmetrical figures and axis of Symmetry

Activity :

- Fold a sheet of paper in half and draw a line as in the opposite figure.



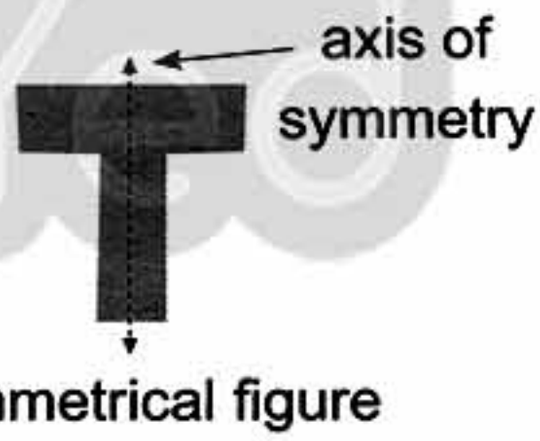
- Cut from the folded side as in the opposite figure.



- Unfold the cut out figure. what will you obtain ?!!



- It is clear that we will obtain the letter "T".
- The letter that we obtained is a **symmetrical** figure, because it can be folded so that one half coincides on the other half.
- The folding line is called a **axis of symmetry.**



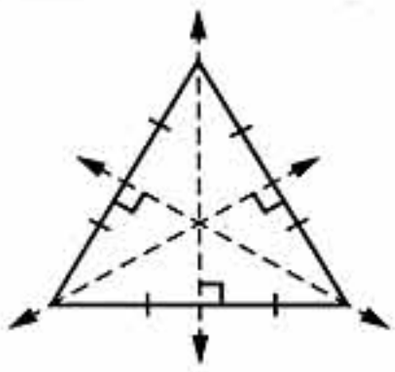
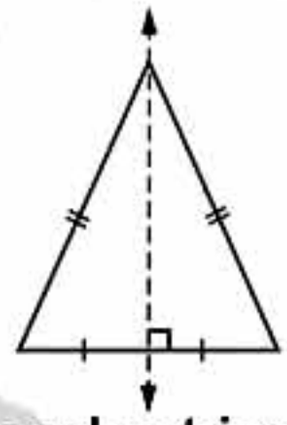
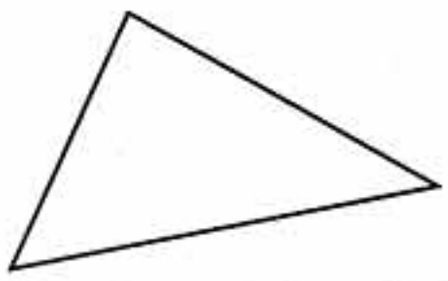
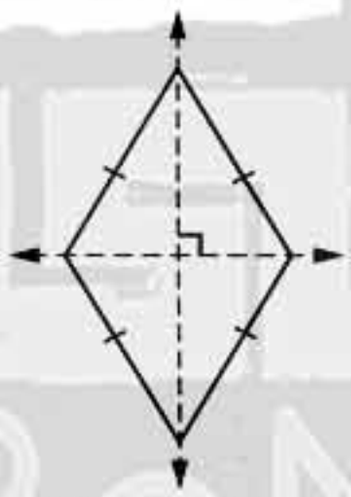
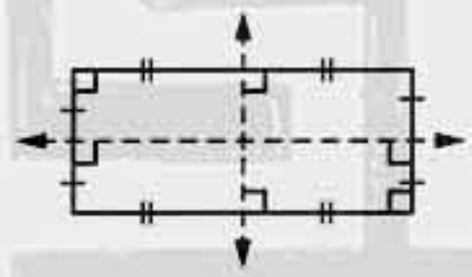
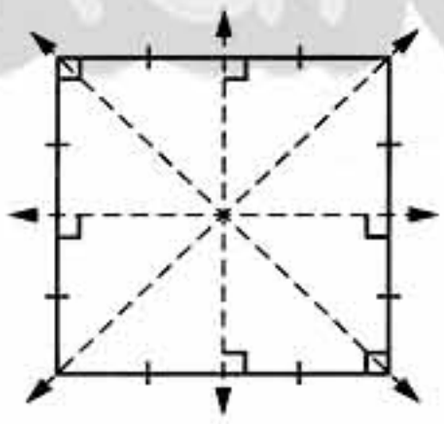
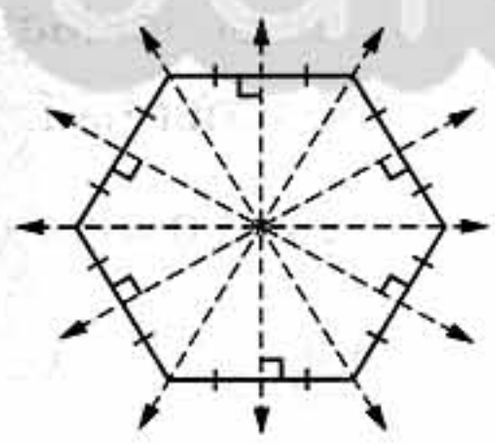
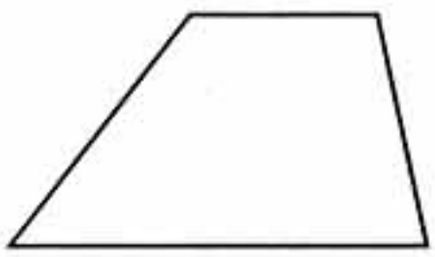
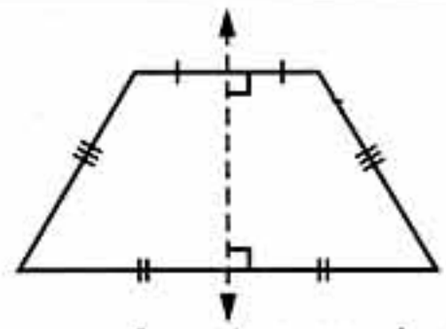
Axis of Symmetry

- Axis of symmetry is a straight line dividing the figure into two identical parts.
- The straight line L is considered to be an axis of symmetry for a figure, if every point on that figure has an identical point on the same figure, with respect to the line L.

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Unit Four

Axes of symmetry for some geometrical figures

The figure	Number of axes of symmetry	The figure	Number of axes of symmetry
 Equilateral triangle	3	 Isosceles triangle	1
 Scalene triangle	0	 Parallelogram	0
 Rhombus	2	 Rectangle	2
 Square	4	 Regular hexagon	6
 Trapezium	0	 Isosceles trapezium	1

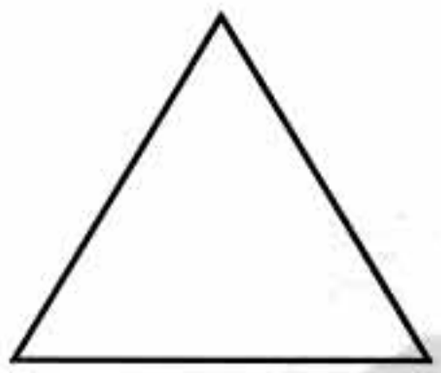
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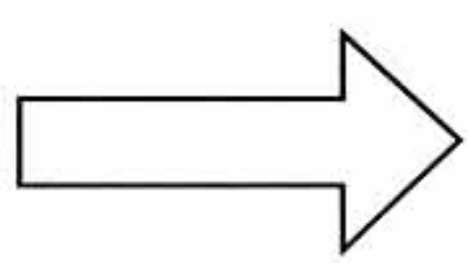
Example 2

In each of the following, draw all the axes of symmetry :

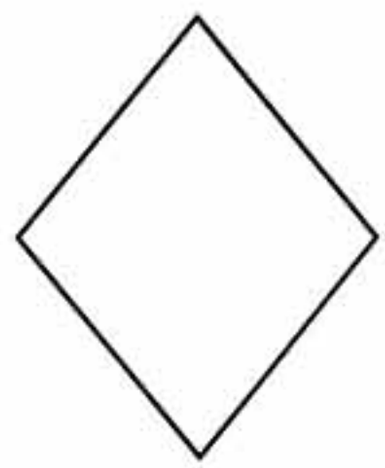
[a]



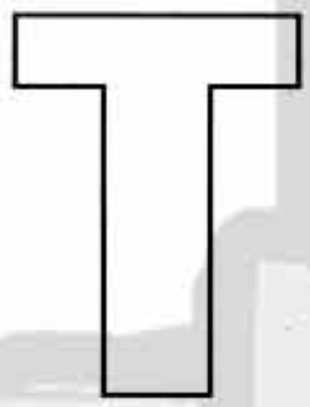
[b]



[c]



[d]



[e]

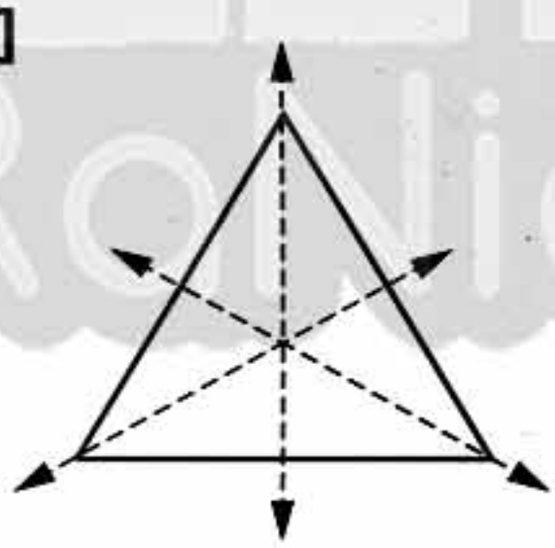


[f]

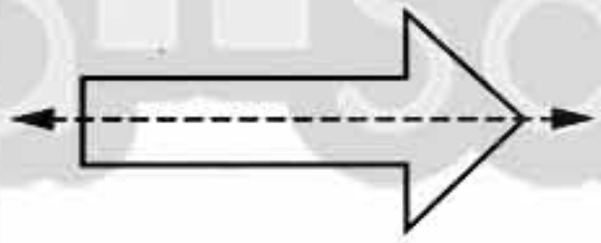


Solution

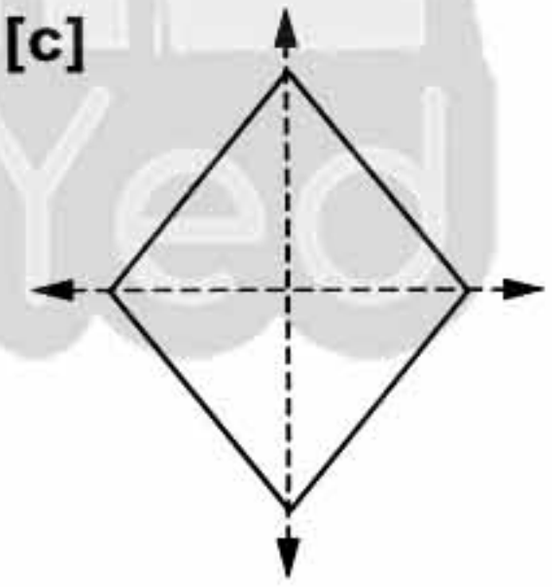
[a]



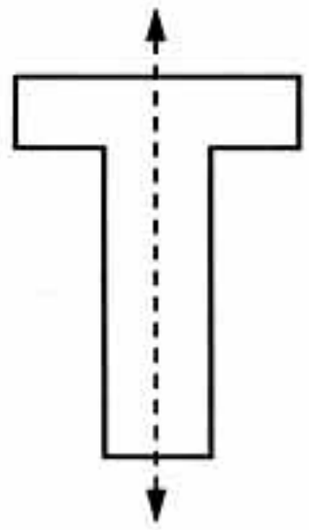
[b]



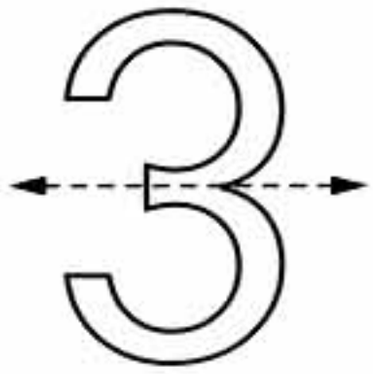
[c]



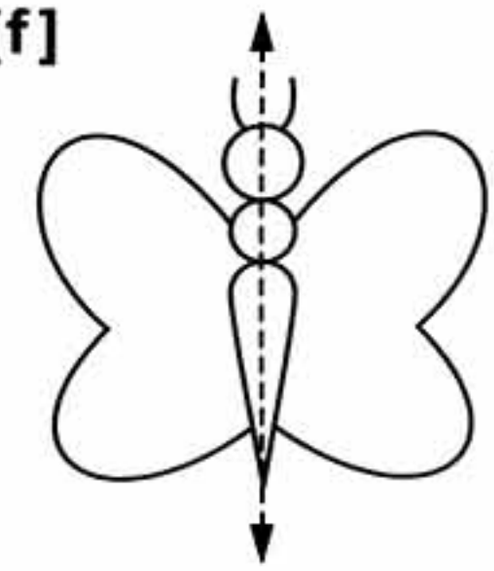
[d]



[e]



[f]



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Unit Four

Try by yourself

Join each figure to its number of lines of symmetry :

Zero

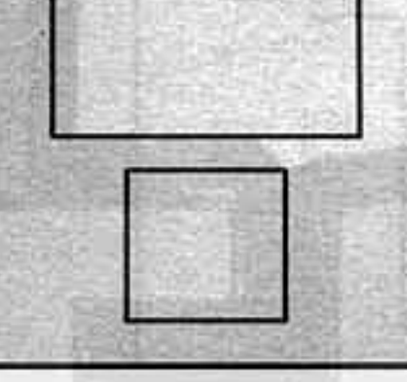
1

2

3

4

5



ذاكرولى RaNia-SaYed

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Lesson One

From the school book

Exercise 6 Geometric transformations - Symmetrical figures and axis of symmetry

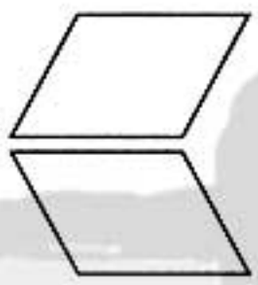
Geometric transformations

1 Describe the type of the geometric transformation (reflection, translation or rotation) :

(a) F F

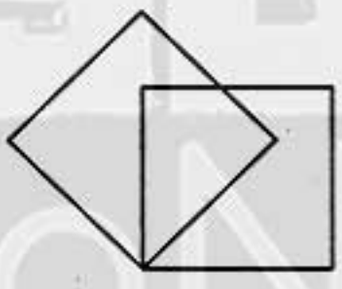
(b) F

(c) F

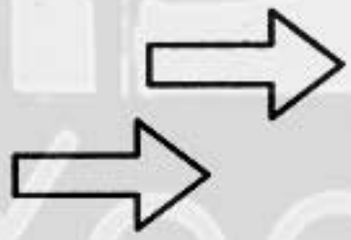
(d) 

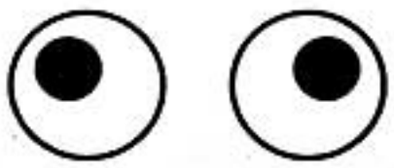
(e) 

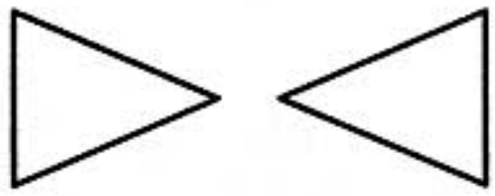
(f) 

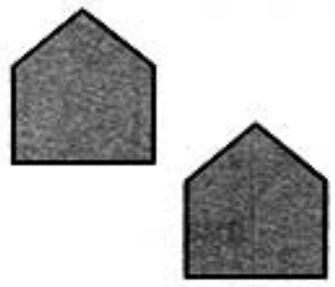
(g) 

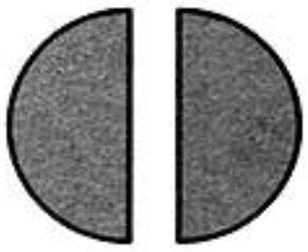
(h) 

(i) 

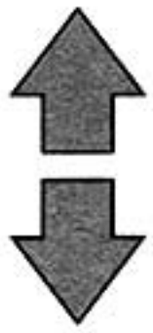
(j) 

(k) 

(l) 

(m) 

(n) 

(o) 

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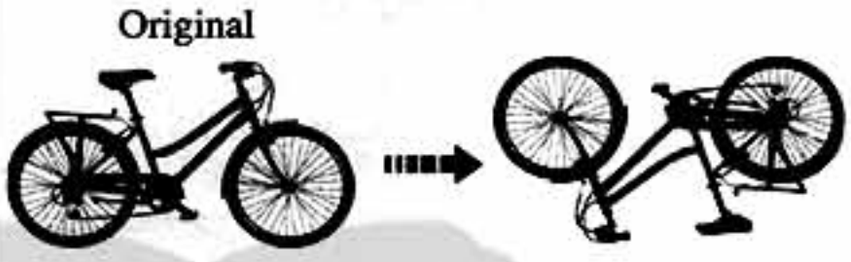
2 Describe the type of the geometric transformation (reflection , translation or rotation) in each of the following :

(a)



.....

(b)



.....

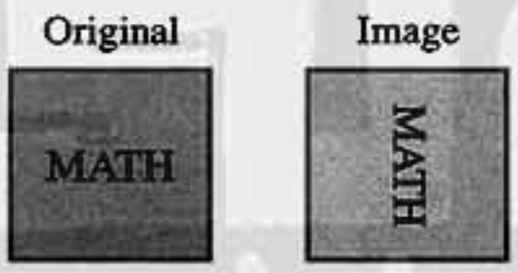
(c)



.....

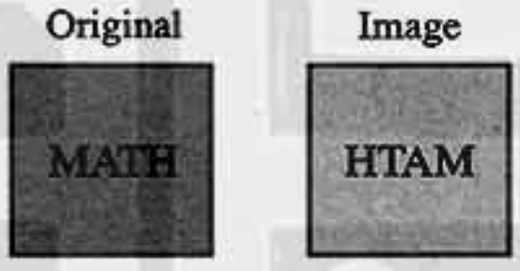
3 Write below each shape the type of the geometric transformation (reflection , translation or rotation) :

(a)



.....

(b)



.....

(c)



.....

4 Write below each shape the type of the geometric transformation (reflection , translation or rotation) :

(a)



.....

(b)



.....

(c)



.....

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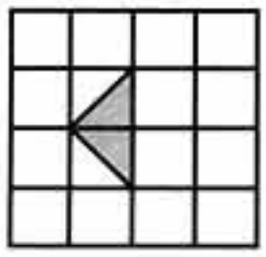


Lesson One

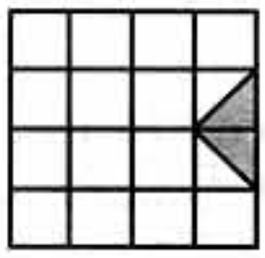
5 **Write the type of the geometric transformation in each of the following shapes :**

(a)

Image



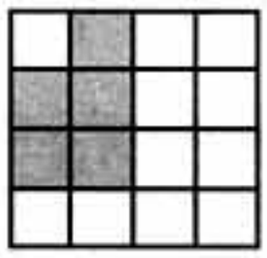
Original



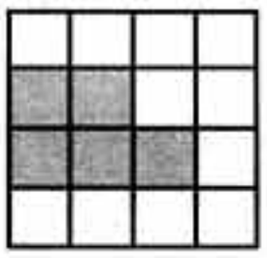
.....

(b)

Image



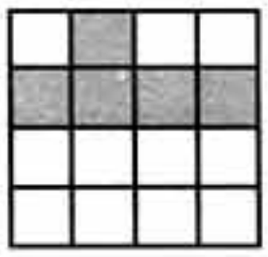
Original



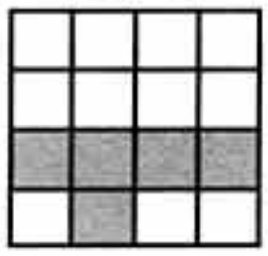
.....

(c)

Image



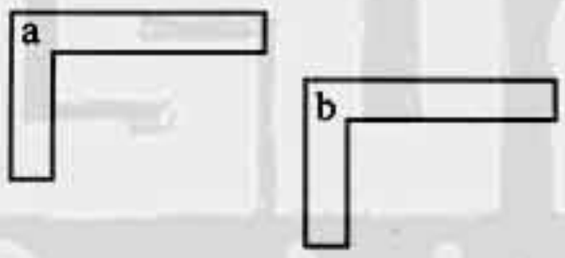
Original



.....

6 **Figure b is the image of figure a by a geometric transformation. Identify each transformation as (translation , reflection or rotation) :**

(a)



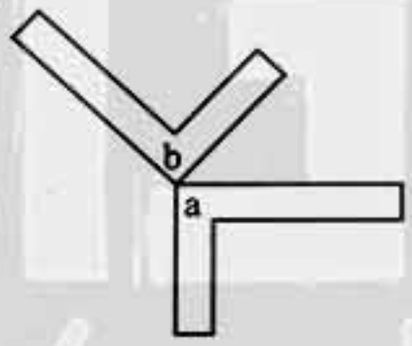
.....

(b)



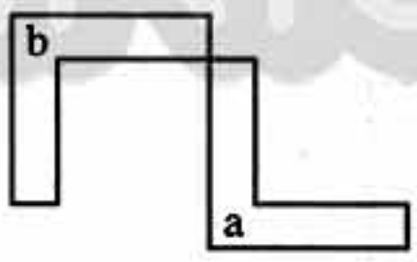
.....

(c)



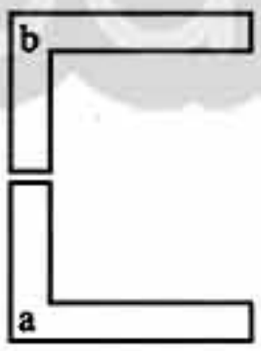
.....

(d)



.....

(e)



.....

7 **Choose the correct answer :**

(a) Which of these techniques can transform the letter **b** into the letter **d** ?

(Reflection **or** Rotation **or** Translation)

(b) Which of these techniques can transform the letter **d** into the letter **p** ?

(Reflection **or** Rotation **or** Translation)

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Unit Four

(c) Which of these techniques can transform the letter **M** into the letter **W** ?

(Reflection **or** Rotation **or** Translation)

(d) Which of these techniques can transform the letter **Z** into the letter **N** ?

(Reflection **or** Rotation **or** Translation)

Symmetrical figures and axis of symmetry

8 **In each of the following, if the figure is symmetrical, then draw all the axis of symmetry to it :**

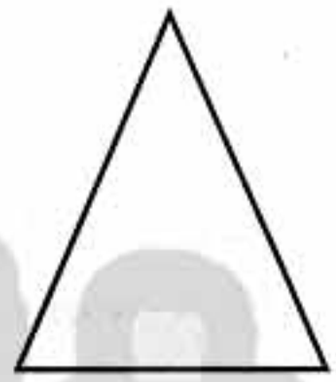
(a)



(b)



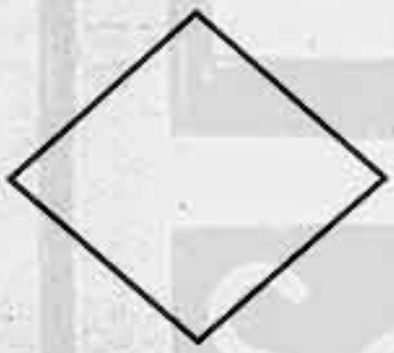
(c)



(d)



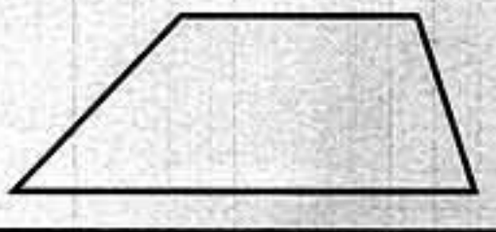
(e)



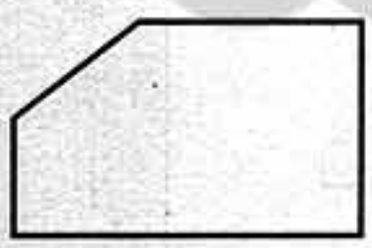
(f)



(g)



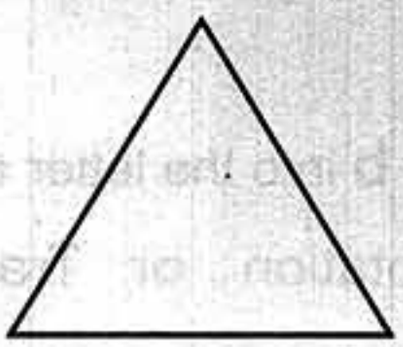
(h)



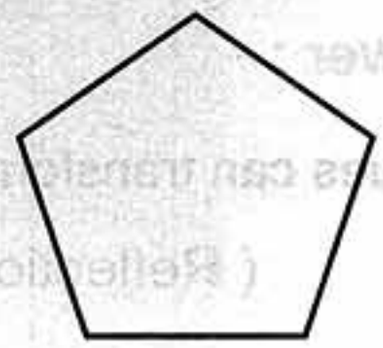
(i)



(j)



(k)



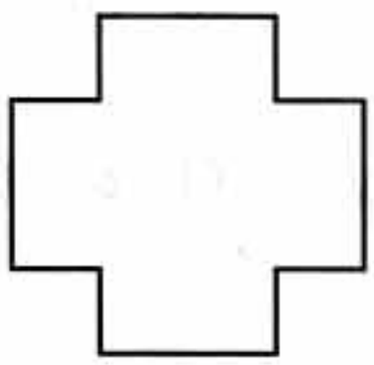
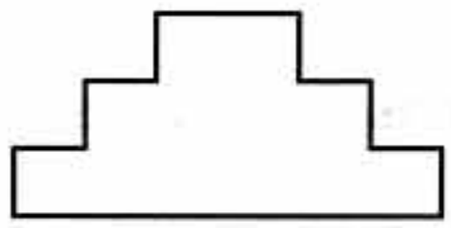
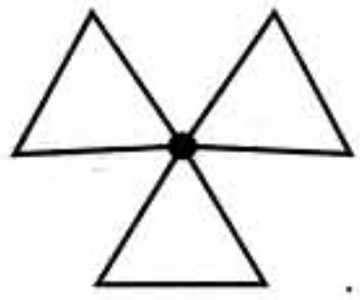
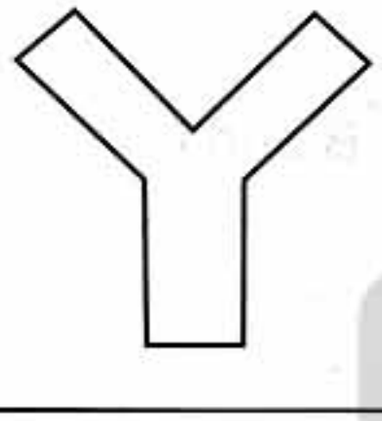
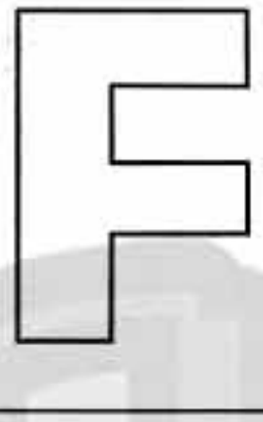
(l)



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Lesson One

(m) 	(n) 	(o) 
(p) 	(q) 	(r) 

9 Complete the following :

(a) 🕮 The symmetry axis divides the figure into two halves.

(b) The isosceles triangle has axis of symmetry.

(c) The equilateral triangle has axes of symmetry.

(d) The isosceles trapezium has axes of symmetry.

(e) The square has axes of symmetry.

(f) The rectangle has axes of symmetry.

(g) The rhombus has axes of symmetry.

(h) The regular hexagon has axes of symmetry.

(i) A diagonal of the rectangle divides it into two triangles, but it is not for the rectangle.

10 Choose the correct answer :

(a) The scalene triangle has axes of symmetry. (2 **or** 0 **or** 1)

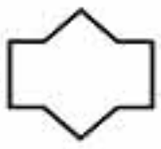
(b) The parallelogram has axes of symmetry. (4 **or** 2 **or** 0)

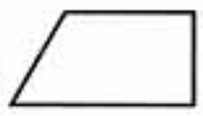
(c) Which of these figures has the greater number of axes of symmetry ?.....
(square **or** equilateral triangle **or** rectangle)

(d) The regular pentagon has axes of symmetry. (0 **or** 1 **or** 5)

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Unit Four

(e) This figure  has axes of symmetry. (4 **or** 1 **or** 2)

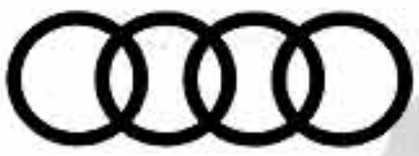
(f) This figure  has axes of symmetry. (1 **or** 0 **or** 2)

(g) In the opposite letters : K X B F

which ones have only one axis of symmetry ?

(K and X **or** B and F **or** K and B)

11 In our daily life , we see many figures having one or more axes of symmetry in front of you , there are some signs of cars. Draw their axes of symmetry if they exist :


(a)


(b)


(c)


(d)


(e)


(f)

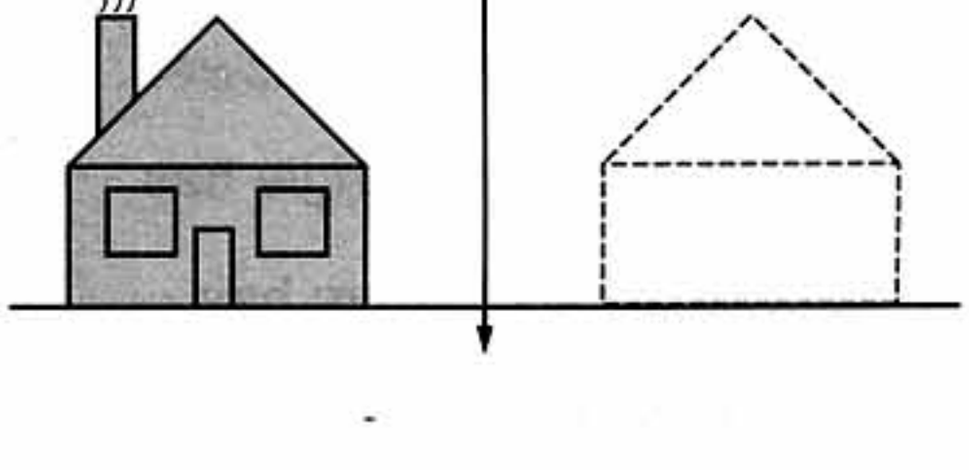

(g)


(h)



Challenge

12 Draw the flip image around the blue line in the following shape :



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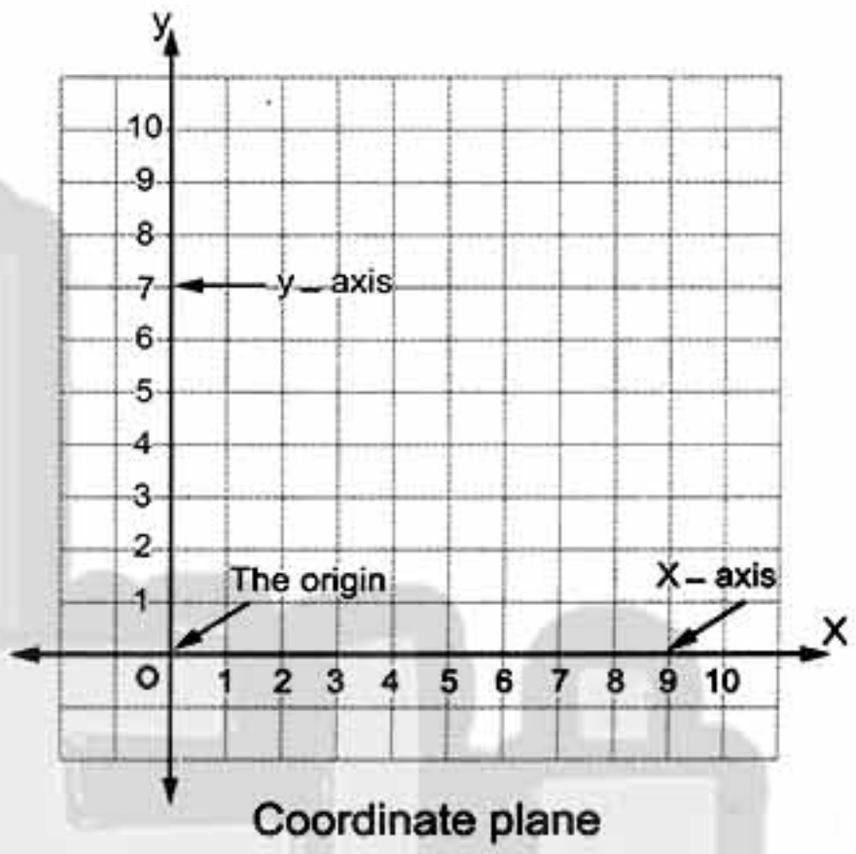
Lesson 2 Reflection

Before studying reflection , we will study how to locate points on a coordinate plane , and how to graph figures on it.

Locating points on a coordinate plane

- **The coordinate plane :**

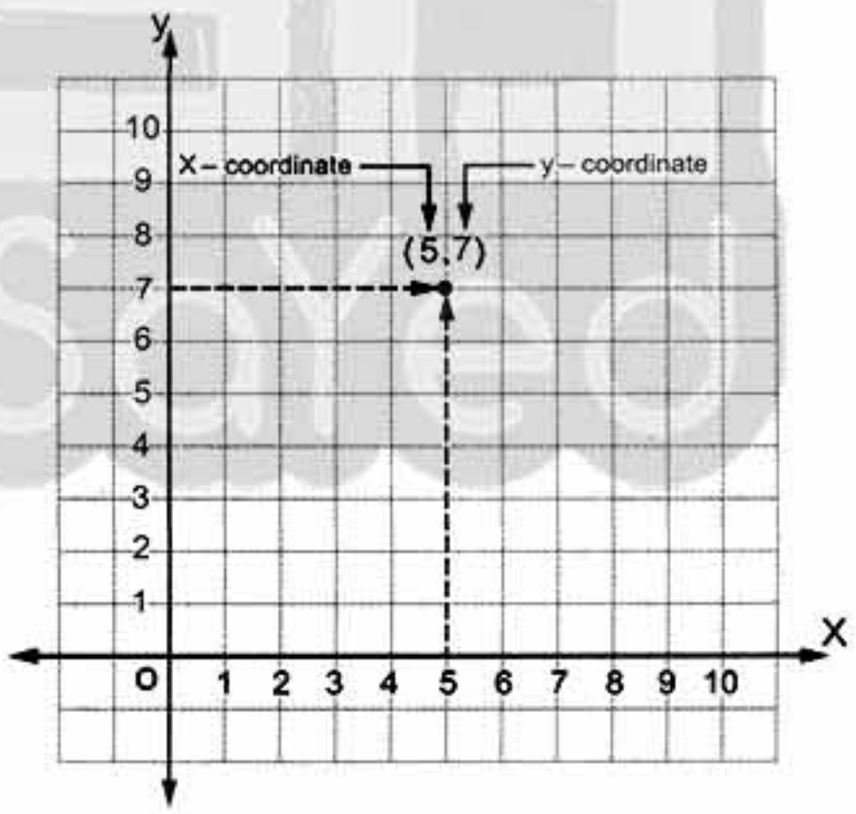
 The plane determined by a horizontal line , called the x-axis , and a vertical line , called the y-axis , intersecting at a point called the origin and is sometimes given the letter "O"



Coordinate plane

- **Ordered pair :**

 Every point in a coordinate plane is named by a pair of numbers whose order is important ; these numbers are written in parentheses and separeted by a comma " , ". For example : (5 , 7)



- **X - coordinate :**

 The number on the left of the comma in an ordered pair is the x - coordinate of the point and indicates the amount of movement along the x-axis from the origin.

- **Y - coordinate :**

 The number of the right of the comma in an ordered pair is the y-coordinate of the point and indicates the amount of movement along the y-axis from the origin.

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Unit Four

- ***Note :*** The coordinates for the origin are (0 , 0)

Example 1 ***Using the following graph answer*** **[a] , [b]** ***and*** **[c]**

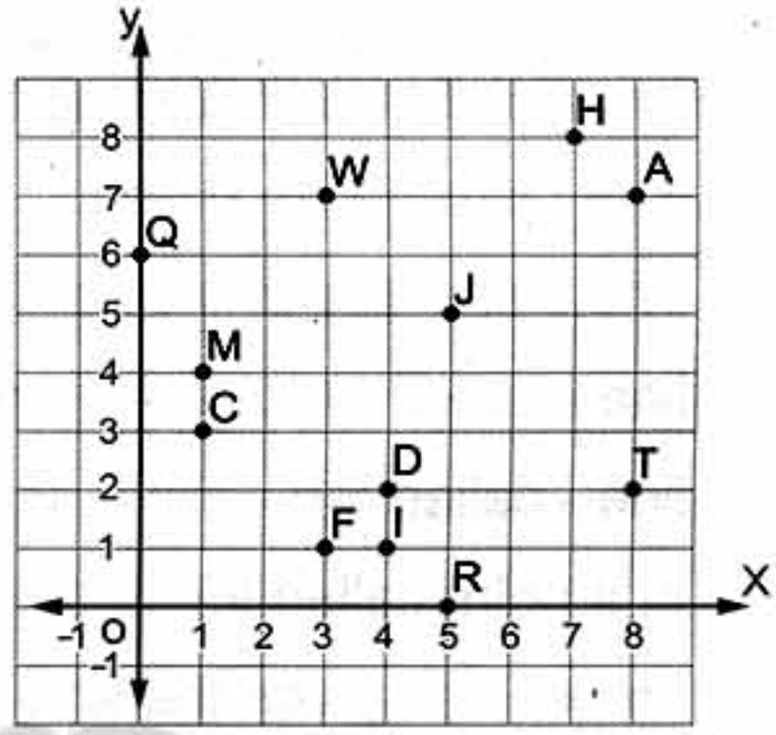
[a] Tell what point is located at each ordered pair :

(1) (3 , 1) **(2)** (7 , 8)

(3) (1 , 4) **(4)** (5 , 0)

(5) (8 , 7) **(6)** (4 , 2)

(7) (5 , 5) **(8)** (1 , 3)



[b] Write the ordered pair for each given point :

(1) A **(2)** T

(3) W **(4)** I

(5) Q

[c] Plot the following points on the coordinates grid :

(1) B (2 , 8) **(2)** E (0 , 7) **(3)** X (6 , 3)

(4) S (8 , 5) **(5)** P (2 , 1) **(6)** G (7 , 7)

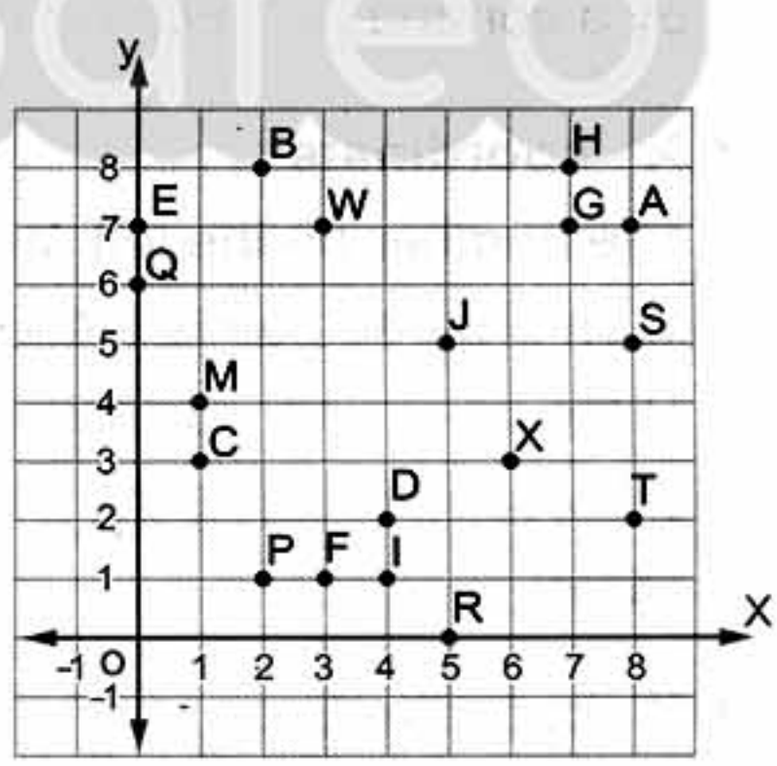
Solution

[a] (1) F **(2)** H

(3) M **(4)** R

(5) A **(6)** D

(7) J **(8)** C



[b] (1) (8 , 7) **(2)** (8 , 2)

(3) (3 , 7) **(4)** (4 , 1)

(5) (0 , 6)

[c] The points are represented on the coordinates grid.

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Lesson Two

Remarks

From the previous example we notice that :

- The position of the point C (1 , 3) is different from the position of the point F (3 , 1)

 i.e. (1 , 3) ≠ (3 , 1) and is read as (1 , 3) is not equal to (3 , 1)

- All points which are on the same horizontal line as P (2 , 1) , F (3 , 1) , I (4 , 1) , ... have the same y - coordinate.

- All points which are on the same vertical line as A (8 , 7) , S (8 , 5) , T (8 , 2) , ... have the same x - coordinate.

Remark

We can graph figures by graphing points and connecting them in order , as in the following example :

Example 2

Graph the points A (1 , 6) , B (2 , 2) , C (8 , 2) and D (7 , 6) , then connect them in order. A ⟶ B ⟶ C ⟶ D ⟶ A

[a] What is the name of the figure ABCD ?

[b] What is the distance between A and D ?

[c] What is the length of $\overline{BC}$?

[d] What is the coordinates of the midpoint of $\overline{AD}$?

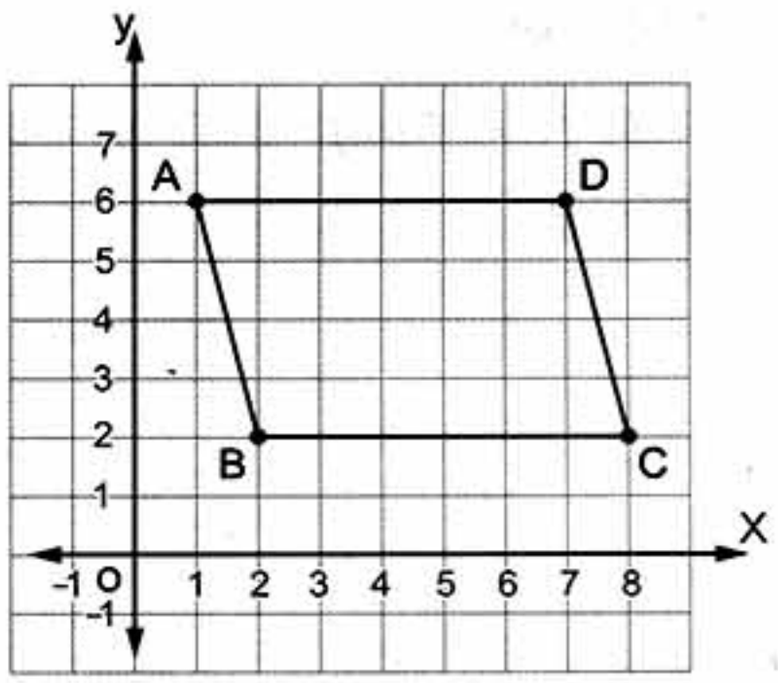
Solution

[a] ABCD is a parallelogram.

[b] The distance between A and D is 6 units length.

[c] BC = 6 units length.

[d] The coordinates of the midpoint of $\overline{AD}$ is (4 , 6).



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Unit Four

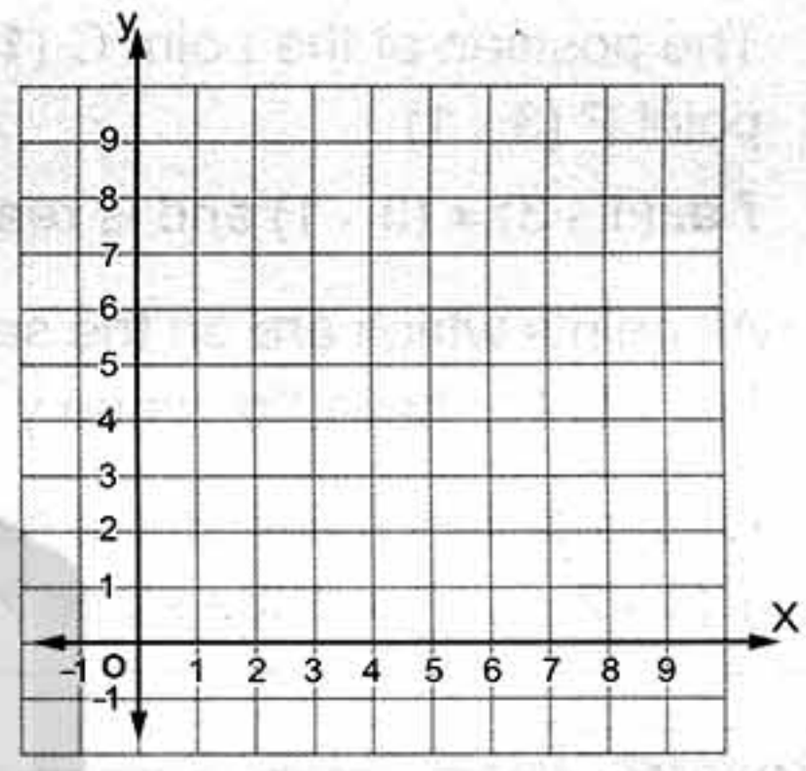
Try by yourself

In the opposite grid :

[a] Graph the figure XYZT

where : X = (1 , 5) , Y = (5 , 1) ,

Z = (9 , 5) and T = (5 , 9)



[b] What is the name of the figure

XYZT ?

XYZT is

[c] What are the coordinates of the

midpoint to the line segment $\overline{XZ}$?

The coordinates are (..... , ...)

Reflection

If you stand in front of a plane mirror , then you will see your picture (image) reflected in the mirror in the same size and details and you will notice also that the distance between the image and the mirror equals the real distance between you and the mirror. If you approach the mirror , then you will find that your image approaches also the mirror.



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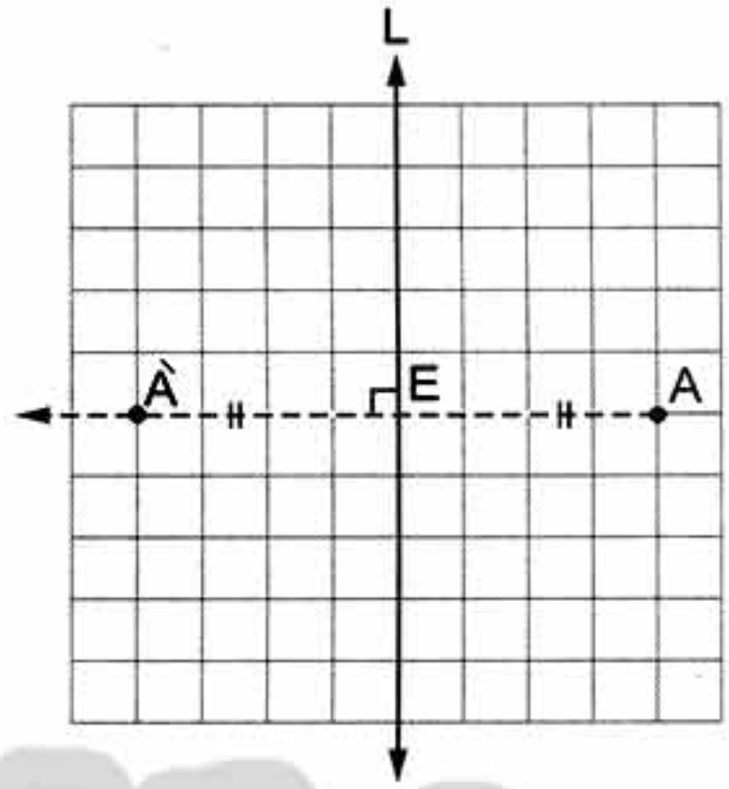
Lesson Two

Reflection across a line

1 How to find the image of a point by reflection across a line ?

To find the image of the point A by reflection across the line L , do as the following :

- Draw from point A a perpendicular ray to L to intersect it at point E
- Take $\grave{A} \in \overrightarrow{AE}$ where $\grave{A}E = AE$, then the point $\grave{A}$ is the image of point A by reflection across the line L
- ***Note that :*** **The line L is called the axis of reflection.**



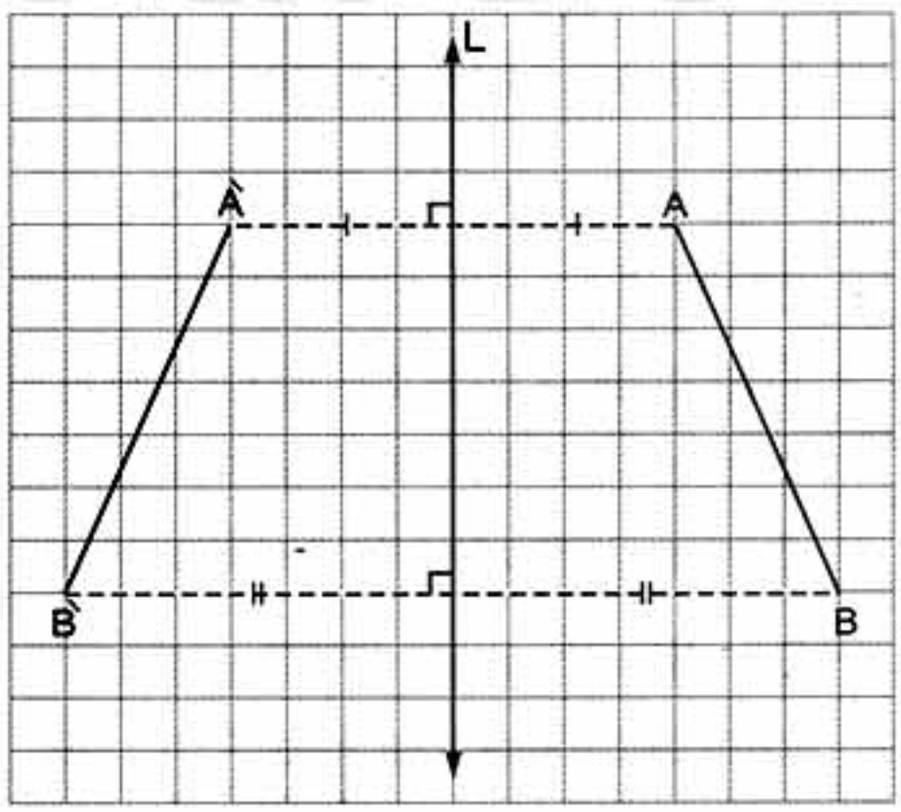
Remark

Let $\grave{A}$ is the image of A by reflection across line L , then :
L bisects the perpendicular segment $\overline{A\grave{A}}$, where $A \notin L$
, $\grave{A}$ coincides on A where $A \in L$.

2 How to find the image of a line segment by reflection across a line ?

To find the image of $\overline{AB}$ by reflection across the line L , do as the following :

- Find the image of A by reflection across L (say $\grave{A}$) as we did before.
- Find the image of B by reflection across L (say $\grave{B}$) as we did before.
- Draw $\overline{\grave{A}\grave{B}}$ to be the image of $\overline{AB}$ by reflection across L.
- ***Note that :*** **AB = $\grave{A}\grave{B}$**

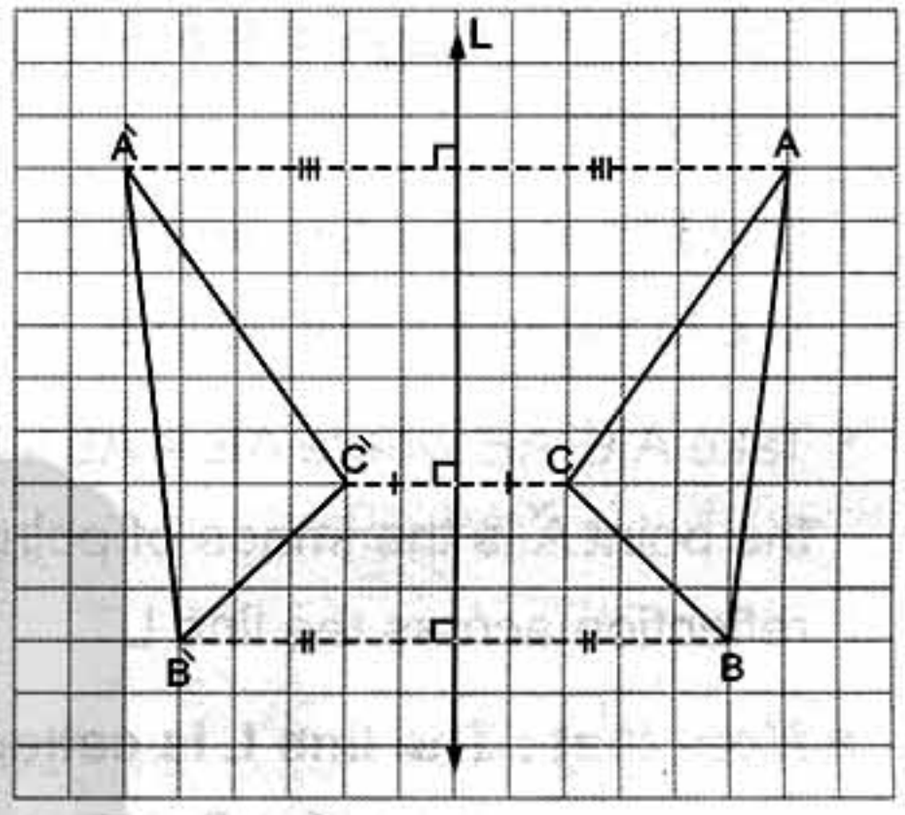


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Unit Four

3 How to find the image of a geometric figure by reflection across a line ?

To find the image of Δ ABC by reflection across the line L , do as the following :



- Find the image of each vertex of Δ ABC by reflection across L as we did before (À is the image of A , B̀ is the image of B and C̀ is the image of C)
- Draw $\overline{\grave{A}\grave{B}}$, $\overline{\grave{B}\grave{C}}$ and $\overline{\grave{C}\grave{A}}$, then Δ ÀB̀C̀ is the image of Δ ABC by reflection across L.

Note that :

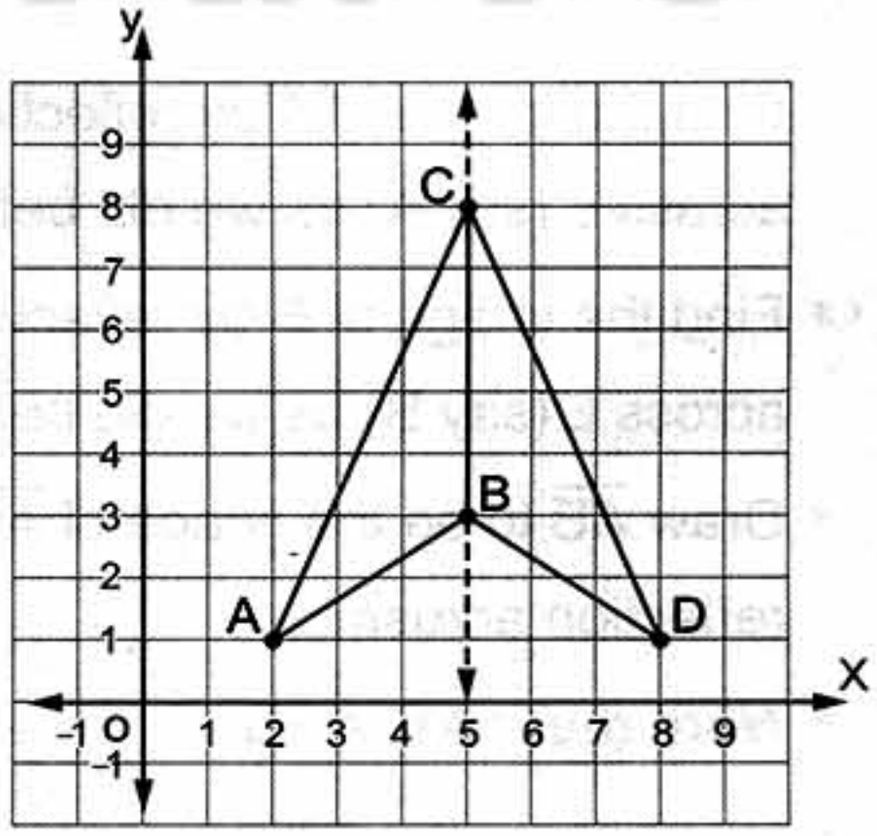
- **ÀB̀ = AB , B̀C̀ = BC , C̀À = CA ,**
- **m (∠ À) = m (∠ A) , m (∠ B̀) = m (∠ B) , m (∠ C̀) = m (∠ C).**
- **Δ ÀB̀C̀ is congruent to Δ ABC.**

Example 3

On the coordinate plane , draw the triangle ABC where A (2 , 1) , B (5 , 3) and C (5 , 8) , then draw the image of it by reflection across $\overleftrightarrow{BC}$.

Solution

- The image of B is itself , because it lies on $\overleftrightarrow{BC}$.
- The image of C is itself , because it also lies on $\overleftrightarrow{BC}$.
- The image of A (2 , 1) is D (8 , 1) because it lies at the same distance from $\overleftrightarrow{BC}$ as the point A.
- So , the triangle DBC is the image of the triangle ABC by reflection across $\overleftrightarrow{BC}$.



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Lesson Two

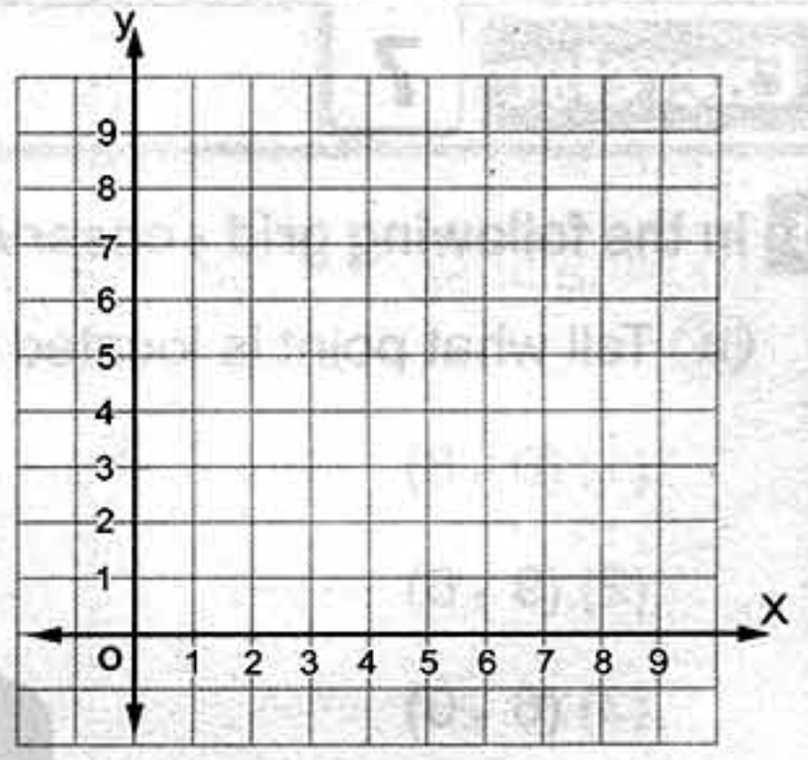
Try by yourself

On the coordinate plane , draw the square ABCD where A (4 , 3) , B (7 , 3) , C (7 , 6) and D (4 , 6) , then draw its image $\grave{A}\grave{B}\grave{C}\grave{D}$ by reflection across $\overleftrightarrow{AD}$.

Complete :

$\grave{A}$ (..... , ...) , $\grave{B}$ (..... , ...)

$\grave{C}$ (..... , ...) , $\grave{D}$ (..... , ...)



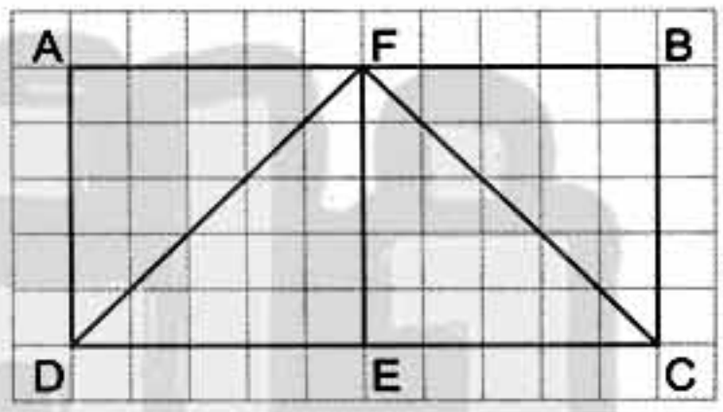
Example 4

In the opposite figure , complete :

[a] The image of Δ CBF by reflection across $\overleftrightarrow{EF}$ is

[b] The image of Δ CBF by reflection across $\overleftrightarrow{CF}$ is

[c] Δ CEF is the image of Δ DEF by reflection across



Solution

[a] Δ DAF **[b]** Δ CEF **[c]** $\overleftrightarrow{EF}$

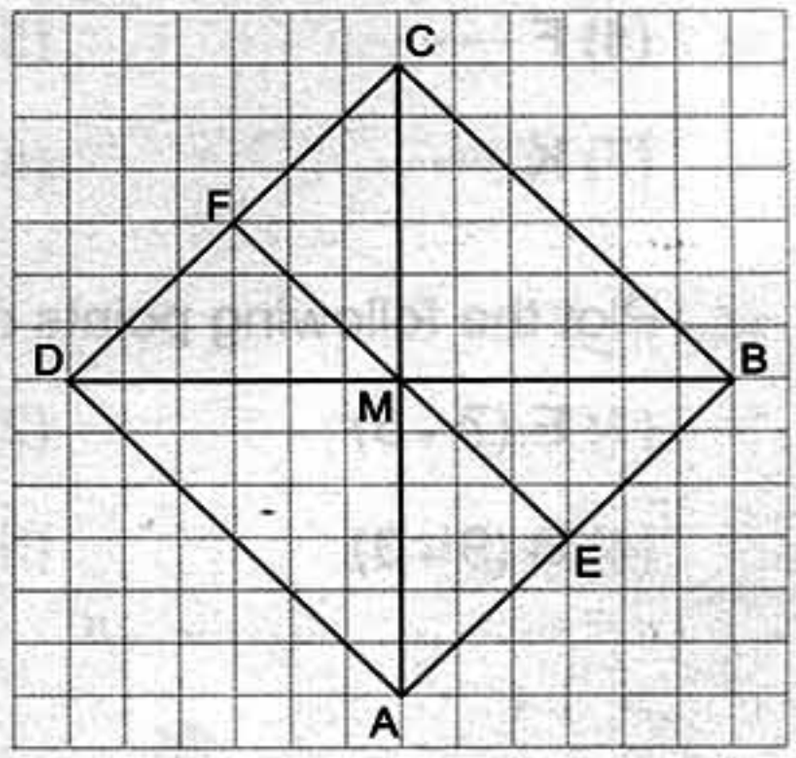
Try by yourself

In the opposite figure , complete :

[a] The image of Δ BMC by reflection across $\overleftrightarrow{EF}$ is

[b] The image of Δ DMF by reflection across $\overleftrightarrow{EF}$ is

[c] Δ ADM is the image of Δ ABM by reflection across



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Unit Four

From the school book

Exercise 7 Reflection

1 In the following grid , observe and answer :

(a) Tell what point is located at each ordered pair :

(1) (0 , 8)

(2) (9 , 6)

(3) (6 , 0)

(4) (2 , 3)

(5) (1 , 0)

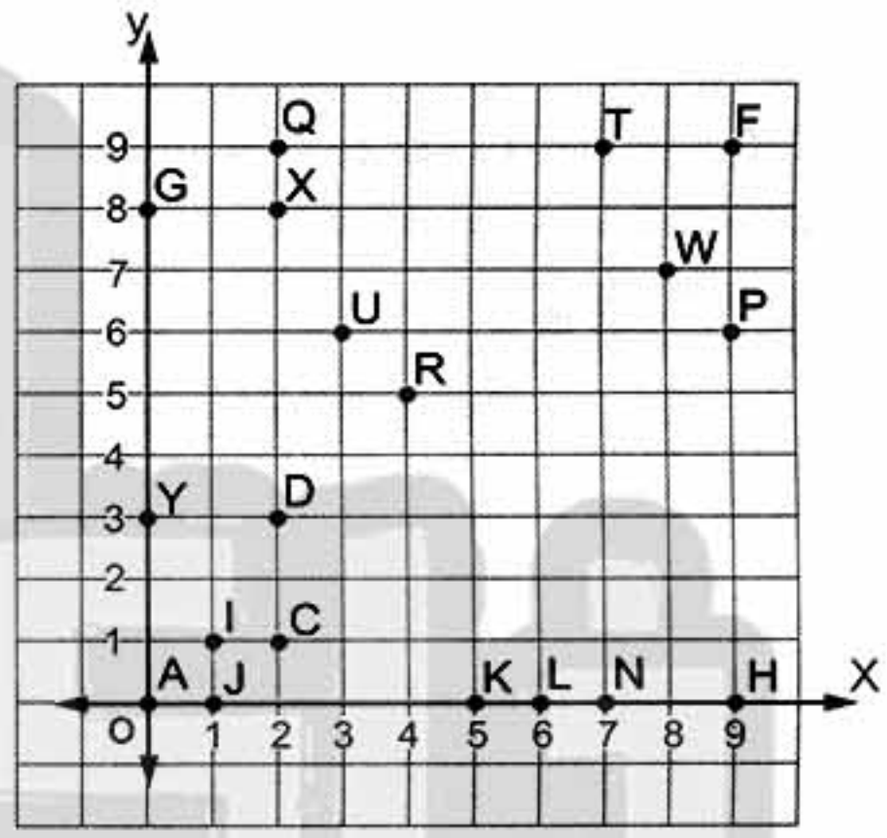
(6) (7 , 9)

(7) (4 , 5)

(8) (2 , 9)

(9) (9 , 0)

(10) (0 , 0)



(b) Write the ordered pair of each of the following points :

(1) W (2) Y (3) N

(4) F (5) C (6) X

(7) K (8) U (9) I

(c) Plot the following points on the coordinates grid :

(1) E (7 , 5) (2) M (1 , 5) (3) Z (8 , 2)

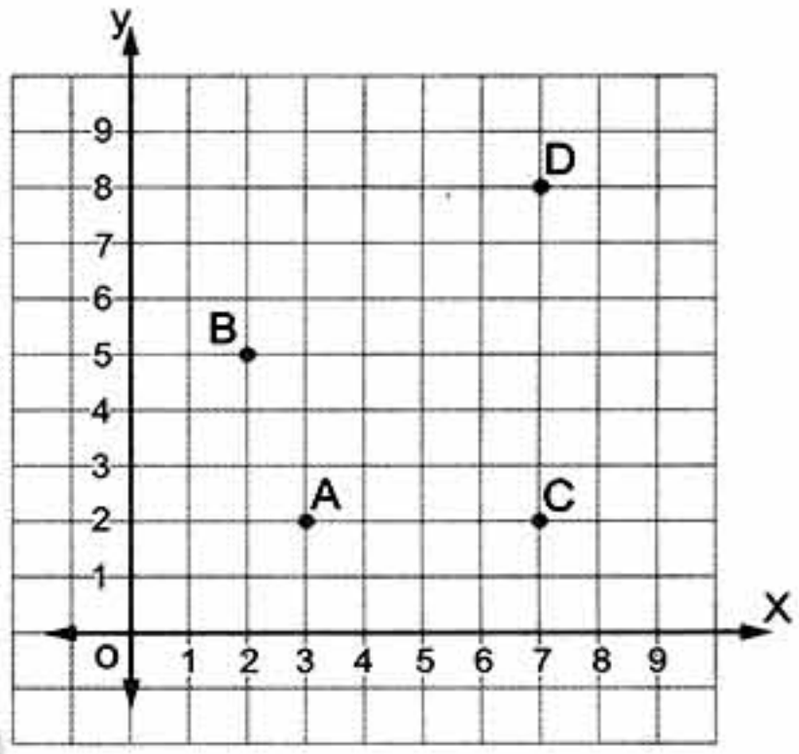
(4) B (9 , 3) (5) V (8 , 9) (6) S (5 , 8)

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Lesson Two

2 🕮 **In the opposite figure :**



(a) **Complete :**

(1) Point C (..... , ...) and

point D (..... , ...)

(2) AC = ... units and

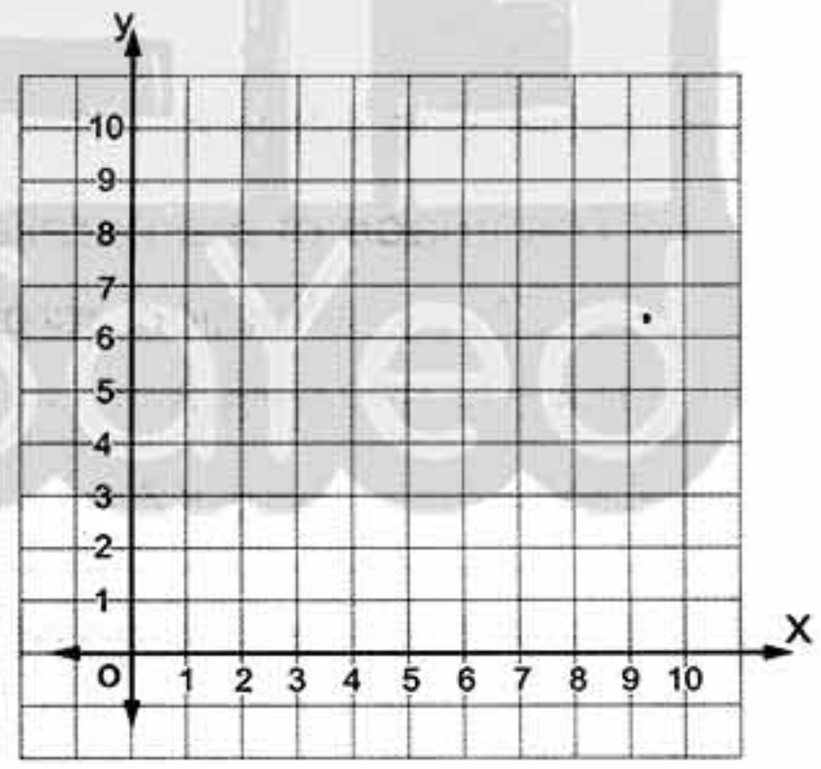
CD = ... units.

(b) **On the figure , plot the points M (5 , 2) and N (5 , 8) , then complete :**

CM = ... units. , MN = ... units. , ND = ... units.

The name of the figure MNDC is and the perimeter of the figure MNDC is units.

3 **In the opposite coordinate plane :**



(a) Graph the figure ABCD where :

A = (2 , 8) , B = (3 , 4) , C = (8 , 4)

and D = (7 , 8)

(b) What is the name of the figure ABCD ?

(c) Use the geometric instruments to find the coordinates of the intersection of the two straight lines $\overleftrightarrow{AC}$ and $\overleftrightarrow{BD}$.

(d) What are the coordinates of the midpoint to the line segment $\overline{AC}$?

(e) What is the length of $\overline{AD}$?

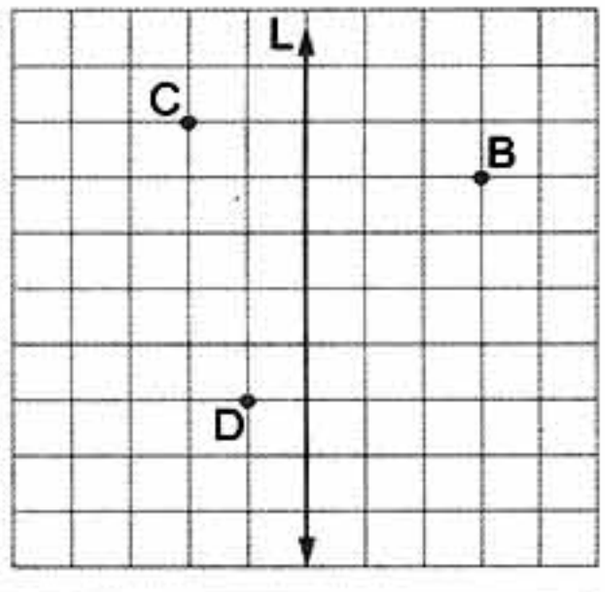
(f) What is the area of the figure ABCD ?

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Unit Four

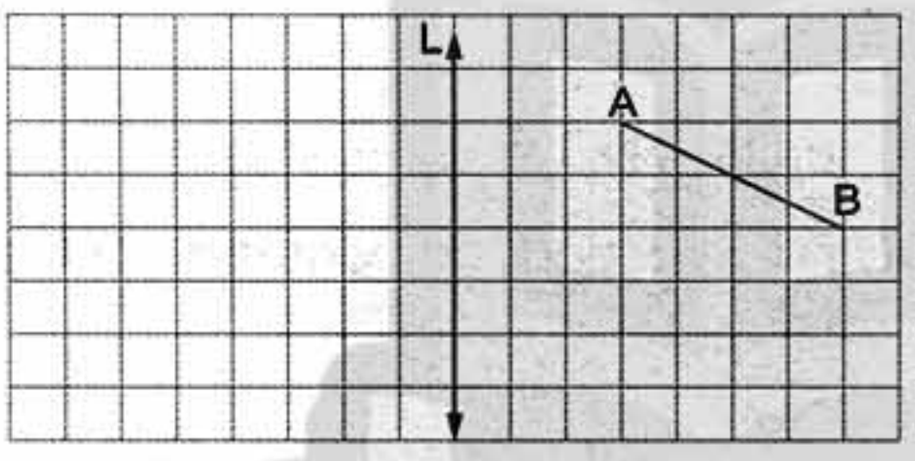
4 🕮 **In the opposite figure :**

Find the image of points B , C and D by reflection across L.

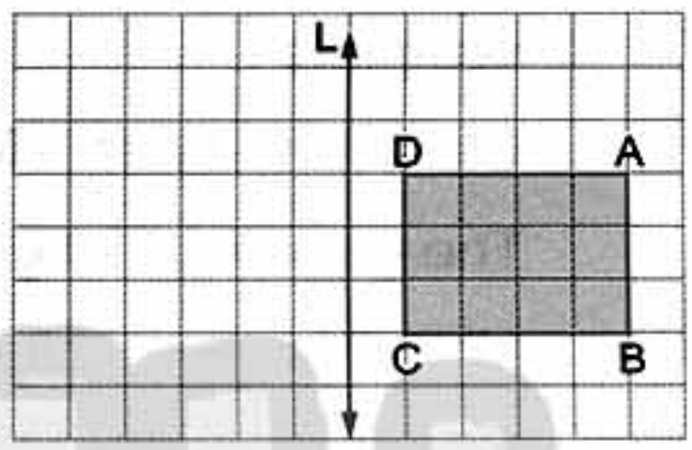


5 **In each of the following , find the image of the figure by reflection across L :**

(a)



(b) 🕮

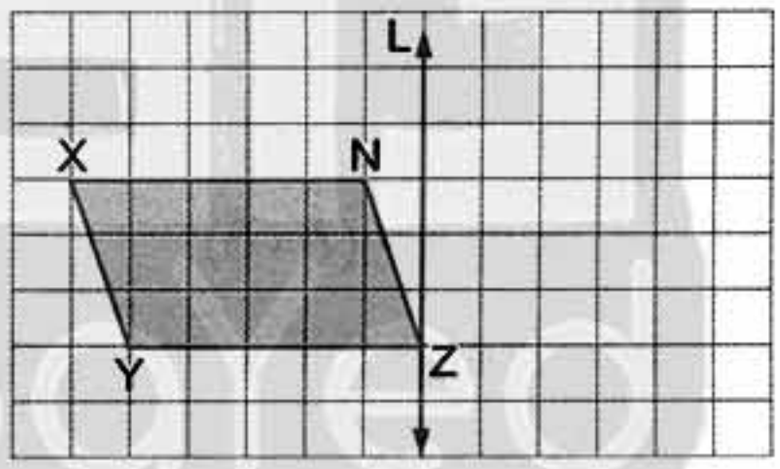


6 🕮 **In the opposite figure :**

Find the image of the parallelogram XYZN by reflection across L , then complete :

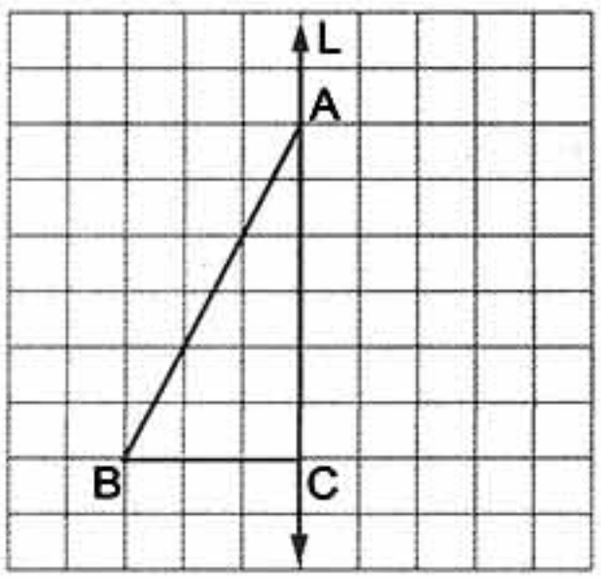
(a) The image of the parallelogram XYZN by reflection across L is the parallelogram

(b) XY = ... and YZ = ...

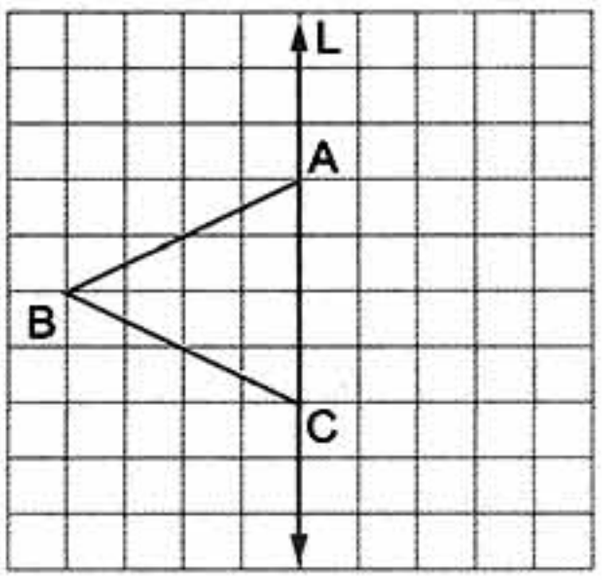


7 🕮 **Determine the image of each figure by reflection across L :**

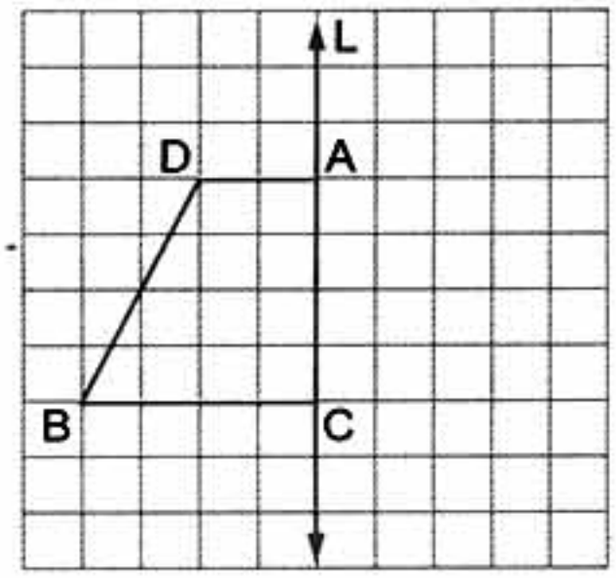
(a)



(b)



(c)



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Lesson Two

Refer to the previous figures , complete :

(1) Each figure and its image are

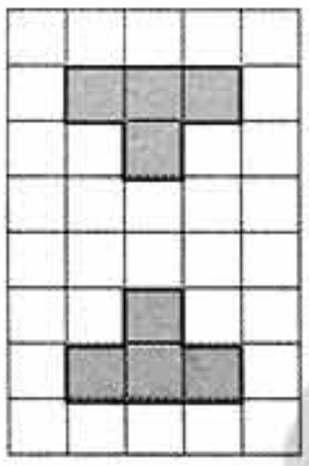
(2) The image of point A is because it

(3) The image of point C is because it

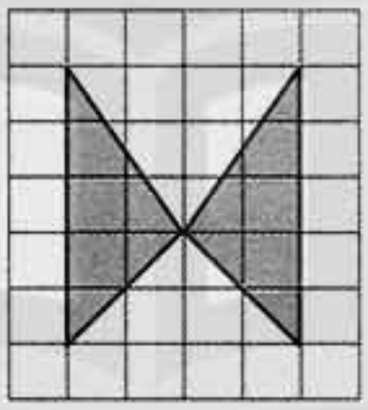
(4) If the paper - where the figure is drawn on - is folded along the axis of symmetry the figure coincides on

8 🕮 **Draw the axis of symmetry to make one of the following figures an image to the other :**

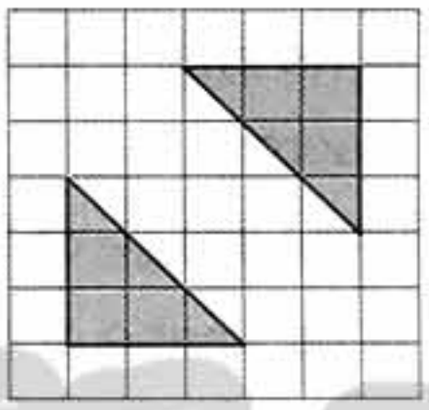
(a)



(b)

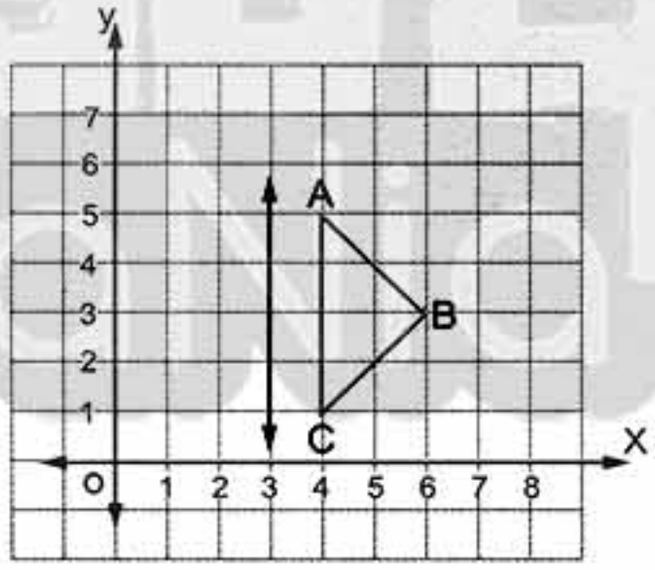


(c)

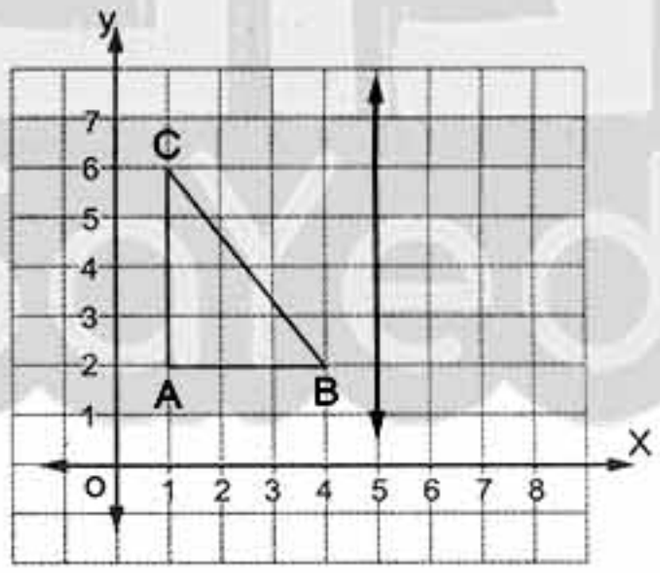


9 **In each of the following , draw a triangle which is a reflection image of the given triangle across the black line :**

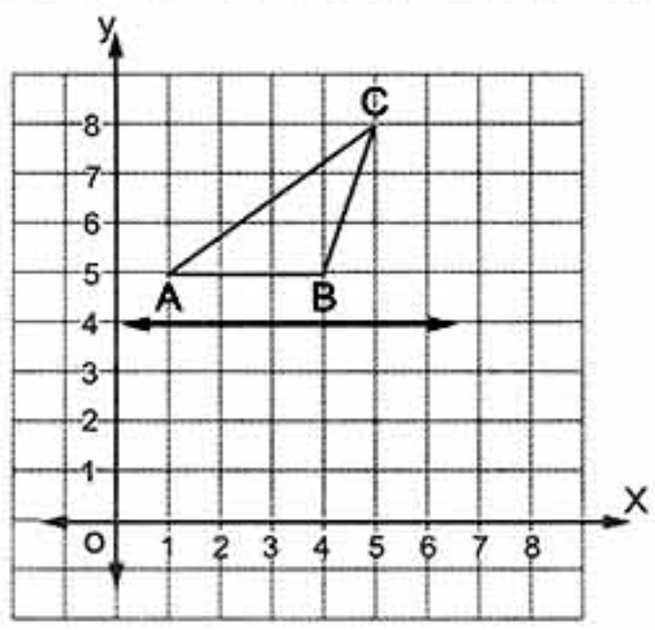
(a)



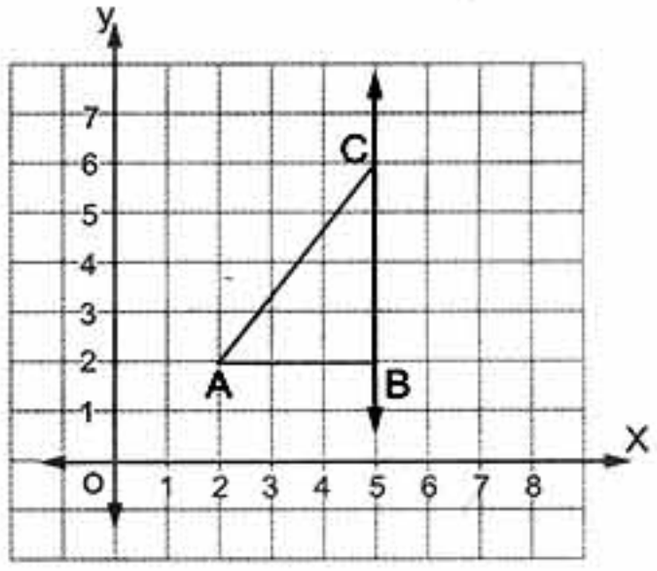
(b)



(c)



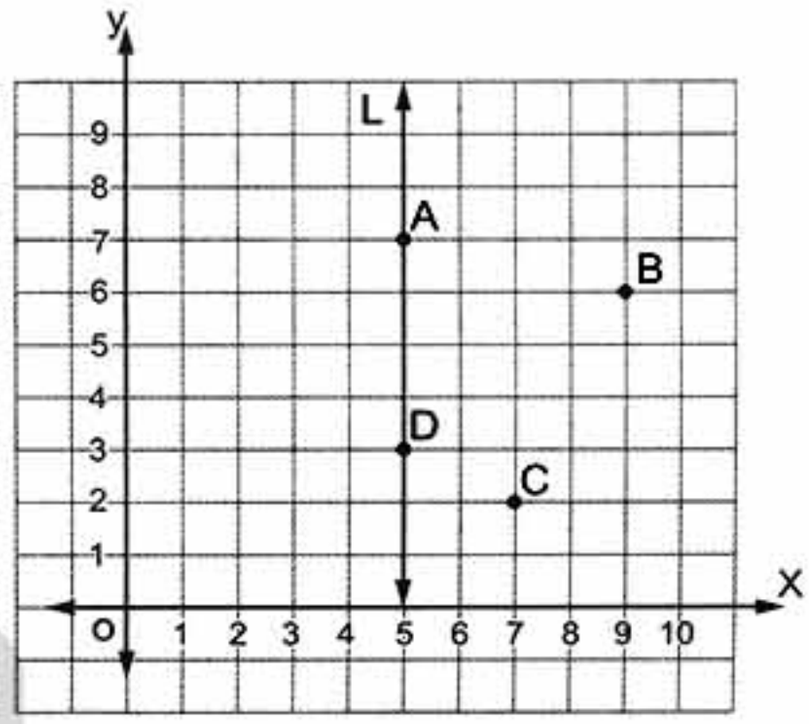
(d)



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Unit Four

10 🕮 **On the coordinate plane illustrated in the opposite figure :**



(a) Complete :

A (..... , ...)

B (..... , ...)

C (..... , ...)

D (..... , ...)

(b) If L is the axis of reflection to the figure ABCD , Complete :

(1) The image of B by reflection across L is $\grave{B}$ (..... , ...)

(2) The image of C by reflection across L is $\grave{C}$ (..... , ...)

(3) The image of A by reflection across L is $\grave{A}$ (..... , ...)

(4) The image of D by reflection across L is $\grave{D}$ (..... , ...)

(5) The image of Δ BCD by reflection across L is

(6) The image of the figure ABCD by reflection across L is

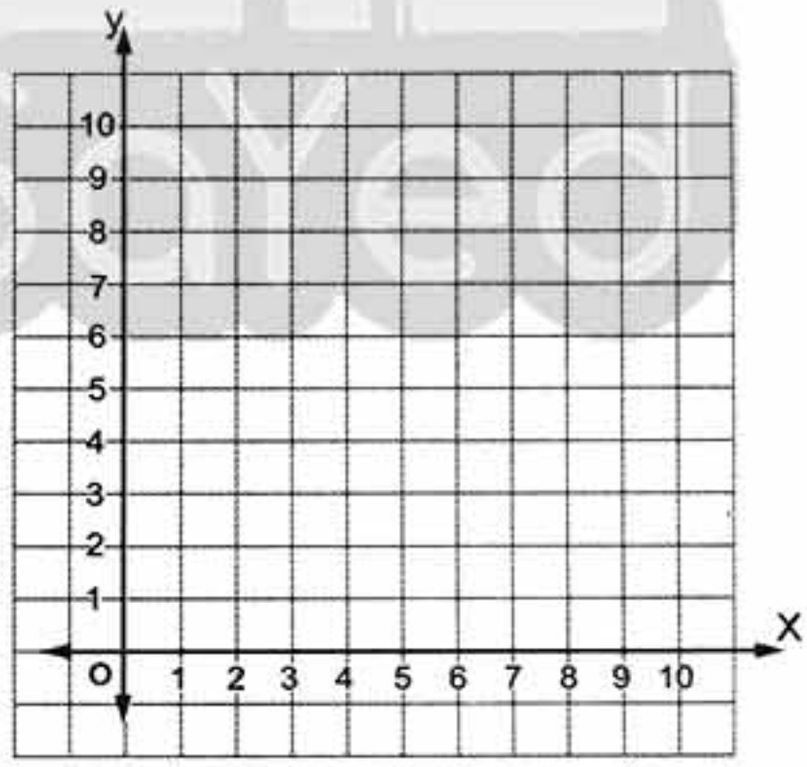
11 🕮 **On a coordinate plane :**

(a) Plot the following points :
A (3 , 5) , B (6 , 5) and C (3 , 2).

(b) Find the length of $\overline{AC}$.

(c) Find the length of $\overline{AB}$.

(d) Draw the image of Δ ABC by reflection across $\overleftrightarrow{AC}$ and determine the ordered pairs that represent the vertices of the image.



12 On the coordinate plane : Draw the triangle ABC , where A (3 , 1) , B (3 , 5) and C (1 , 1) , then draw the image of Δ ABC by reflection across $\overleftrightarrow{AB}$.

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Lesson Two

13 On the coordinate plane : Draw the triangle ABC , where A (1 , 2) , B (1 , 5) and C (5 , 5) , then draw the image of triangle ABC by reflection across $\overleftrightarrow{BC}$.

14 On the coordinate plane : Draw the triangle ABC , where A (4 , 5) , B (2 , 0) and C (4 , 1) , then draw its image by reflection across $\overleftrightarrow{AC}$.

15 On the coordinate plane : Draw the figure ABCD in which A (2 , 3) , B (2 , 5) , C (5 , 5) and D (5 , 2) , then draw its image by reflection across $\overleftrightarrow{CD}$.

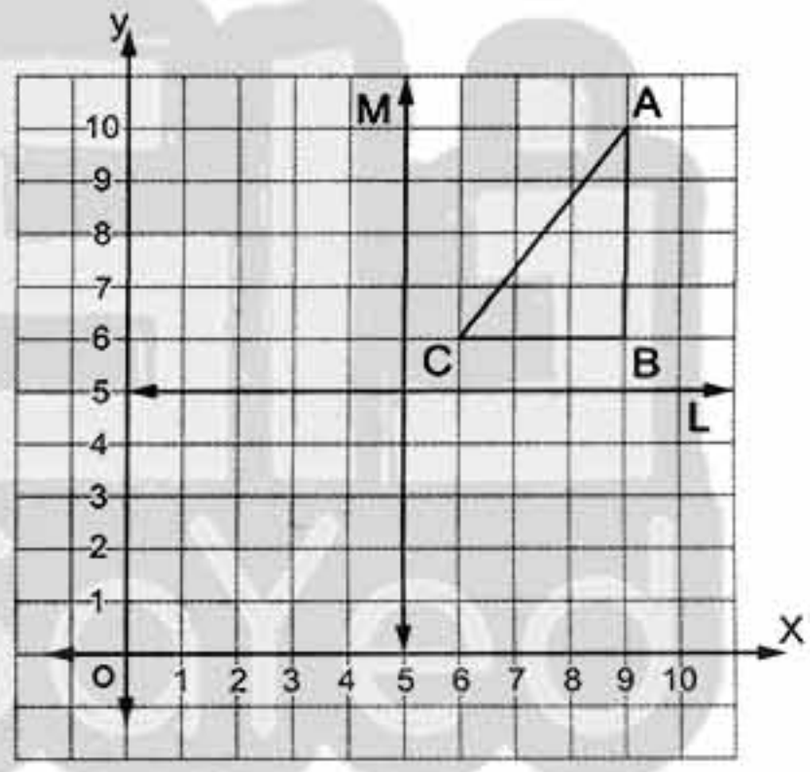
16 On the coordinate plane , determine the points : A (5 , 0) , B (9 , 0) , C (9 , 4) and D (5 , 4). What is the name of the figure ABCD ? Then find its image by reflection across $\overleftrightarrow{AD}$.

17 🕮 **The opposite figure represents a coordinate plane :**

(a) Write the coordinates of points A , B and C.

(b) Draw $\Delta \grave{A}\ \grave{B}\ \grave{C}$ the image of Δ ABC by reflection across (L) and determine the coordinates of the vertices $\grave{A}$, $\grave{B}$ and $\grave{C}$.

(c) Draw $\Delta \acute{A}\ \acute{B}\ \acute{C}$ the image of Δ ABC by reflection across (M) and determine the coordinates of its vertices $\acute{A}$, $\acute{B}$ and $\acute{C}$.

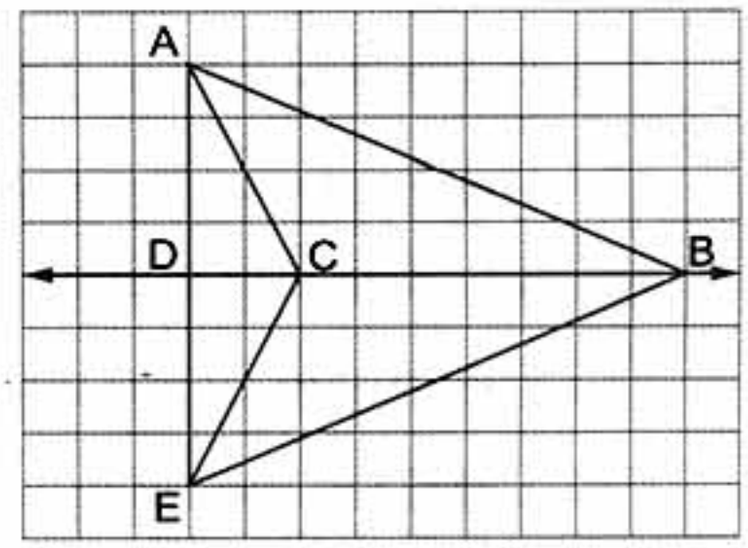


18 🕮 **In the opposite figure , $\overleftrightarrow{BD}$ is the axis of reflection.**

Complete :

(a) The image of Δ ABC by reflection across $\overleftrightarrow{BD}$ is , then AB = ... and AC = ...

(b) The image of Δ ACD by reflection across $\overleftrightarrow{BD}$ is , then AD = ... and $\overline{CD}$ coincides on

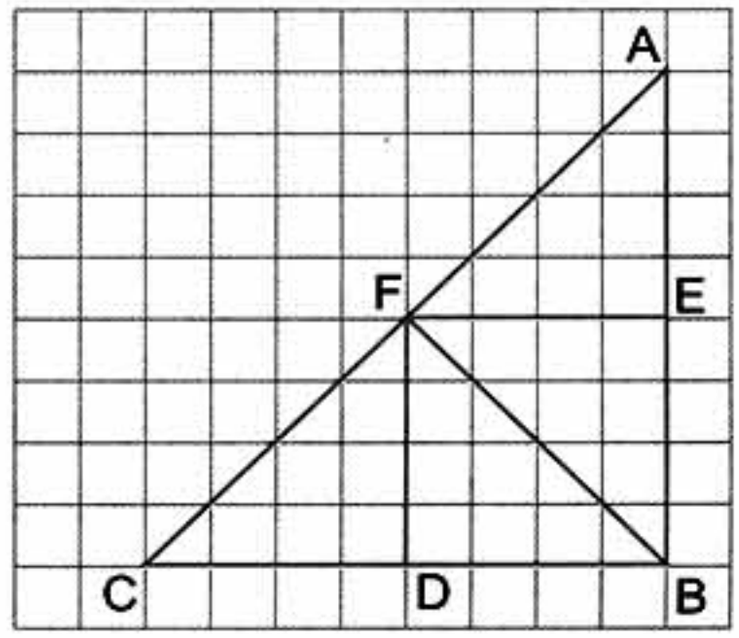


(c) Δ ABC is congruent to Δ and Δ ECD is congruent to Δ

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Unit Four

19 🕮 **In the opposite figure , Complete :**



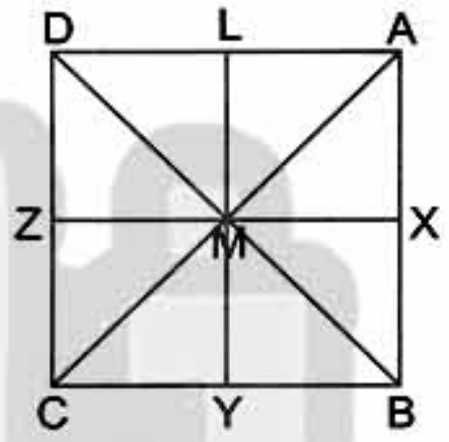
(a) Δ BEF is the image of Δ AEF
by reflection across ⟷

(b) Δ BDF is the image of Δ CDF
by reflection across ⟷

(c) Δ ABF is the image of Δ CBF
by reflection across ⟷

(d) Δ BEF is the image of Δ BDF
by reflection across ⟷

20 In the opposite figure :



ABCD is a square. M is the point of intersection of its diagonals X , Y , Z and L are the midpoints of its sides $\overline{AB}$, $\overline{BC}$, $\overline{CD}$ and $\overline{DA}$ respectively.

Complete the following :

(a) The image of the point A by reflection across $\overleftrightarrow{LY}$ is

(b) The image of the $\overline{AM}$ by reflection across $\overleftrightarrow{XM}$ is

(c) The image of the Δ ALM by reflection across $\overleftrightarrow{LY}$ is

(d) The image of the Δ ALM by reflection across $\overleftrightarrow{XZ}$ is

(e) The image of the Δ ALM by reflection across $\overleftrightarrow{AM}$ is

(f) The image of the Δ AMB by reflection across $\overleftrightarrow{LY}$ is

(g) The image of the Δ AMB by reflection across $\overleftrightarrow{XZ}$ is

(h) The image of the square AXML by reflection across $\overleftrightarrow{LY}$ is and by reflection across $\overleftrightarrow{AM}$ is

(i) The image of the square ABCD by reflection across $\overleftrightarrow{LY}$ is

(j) Δ MZD is the image of Δ MZC by reflection across

(k) Δ AXM is the image of Δ CYM by reflection across

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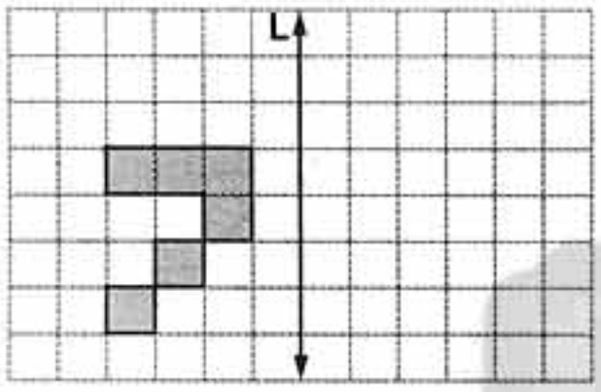
Lesson Two



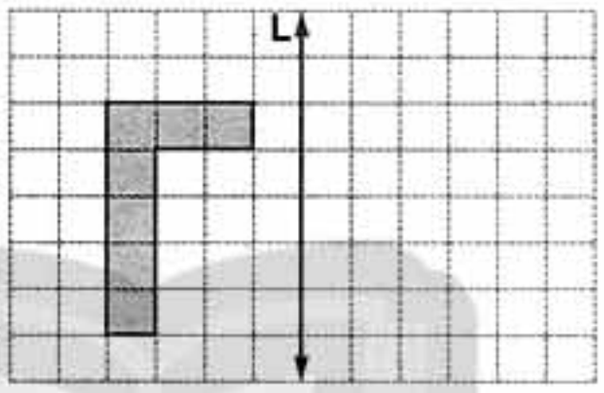
Challenge

21 🕮 **In the following figures , draw the image of the colored figure by reflection across L.**

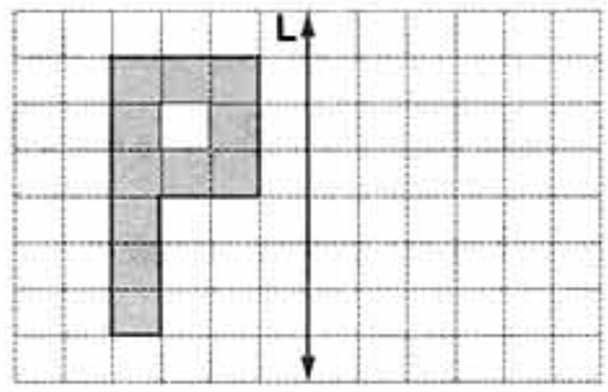
(a)



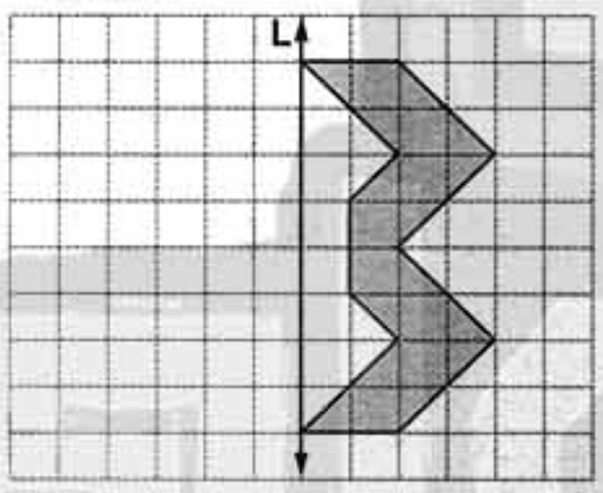
(b)



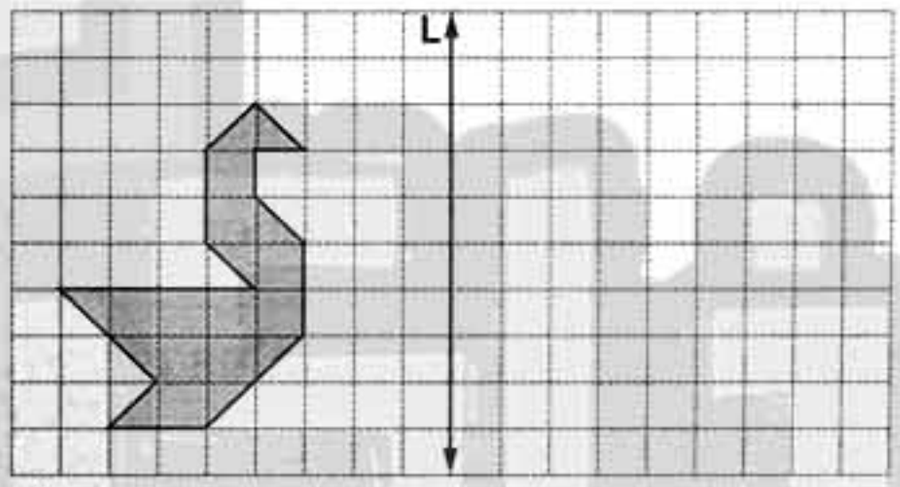
(c)



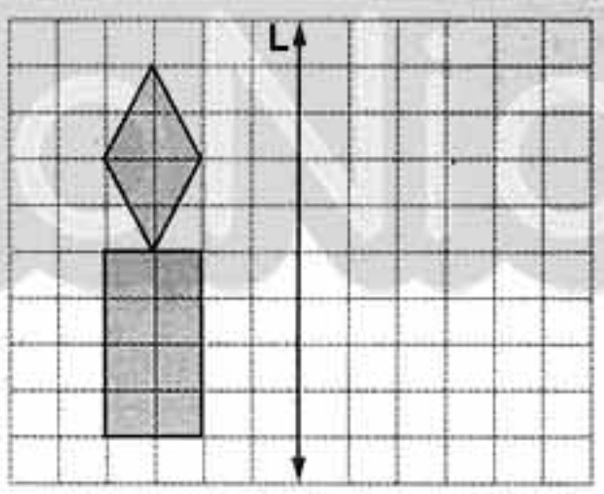
(d)



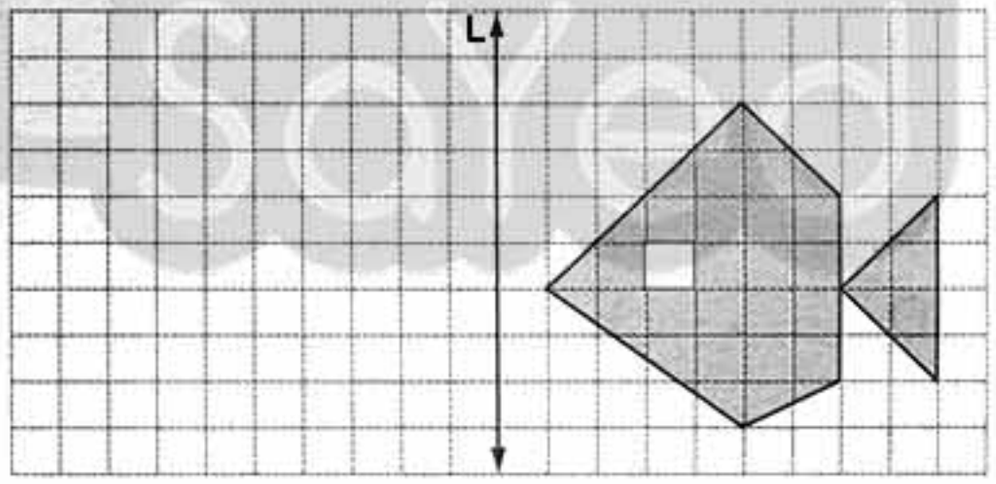
(e)



(f)



(g)



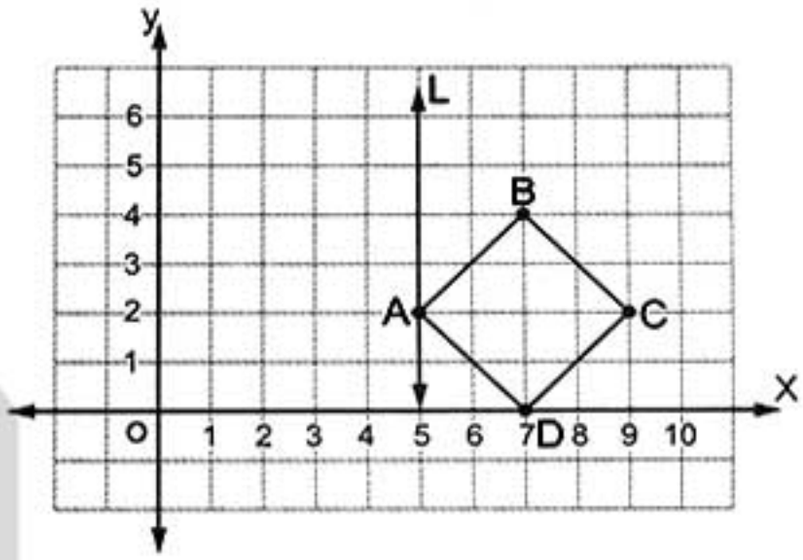
22 Critical thinking : Sketch the next figure in the sequence below :

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Unit Four

General exercises on unit four from the school book

(1) In the cartesian coordinates plane.
Find the image of the square by reflection on the straight line L where
A (5 , 2) , B (7 , 4) , C (9 , 2) , D (7 , 0)



Then complete :

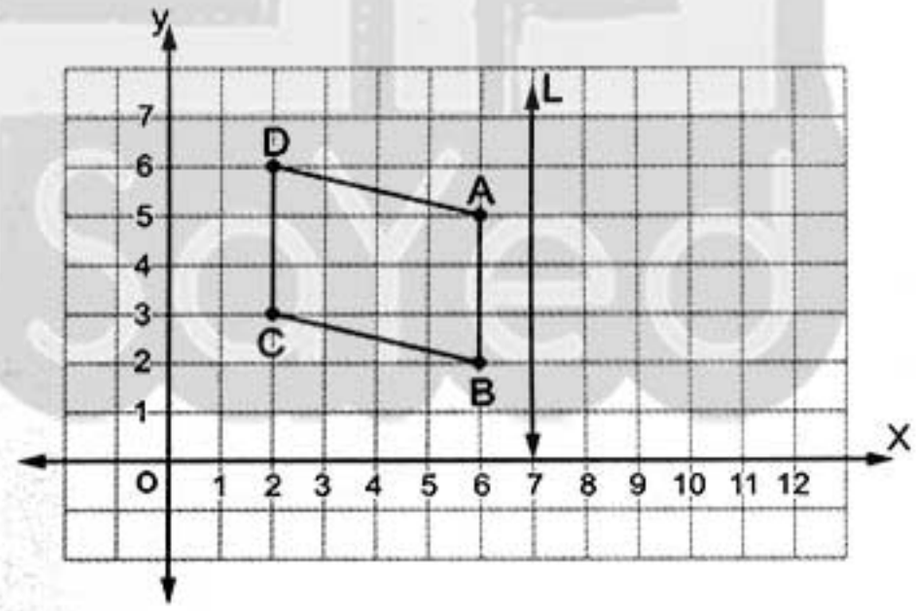
(a) The image of A by reflection in the straight line L is (..... , ...)

(b) The image of B by reflection in the straight line L is (..... , ...)

(c) The image of C by reflection in the straight line L is (..... , ...)

(d) The image of D by reflection in the straight line L is (..... , ...)

(2) In the cartesian coordinates plane, from the following figure :



First : Complete :

A (..... , ...)

B (..... , ...)

C (..... , ...)

D (..... , ...)

Second :

If L is the axis of reflection of the figure ABCD Find the image of the figure by reflection in the straight line L, **then complete.**

(a) The image of A by reflection in the straight line L is À (..... , ...)

(b) The image of B by reflection in the straight line L is B̀ (..... , ...)

(c) The image of C by reflection in the straight line L is C̀ (..... , ...)

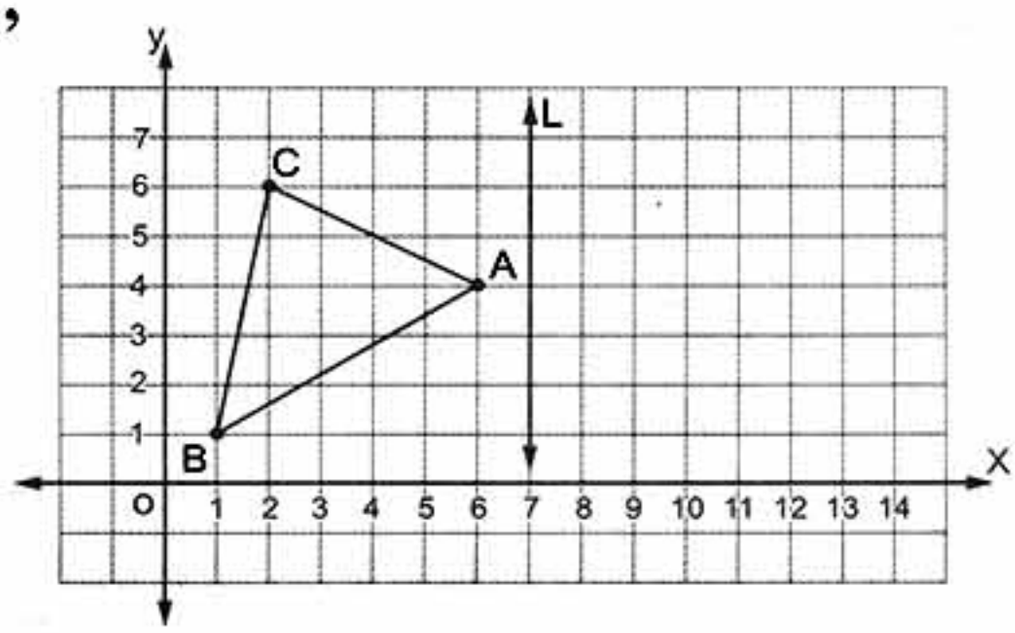
(d) The image of D by reflection in the straight line L is D̀ (..... , ...)

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General exercise

3 **In the cartesian coordinates plane, from the following figure :**



First : Complete :

A (..... , ...)

B (..... , ...)

C (..... , ...)

Second :

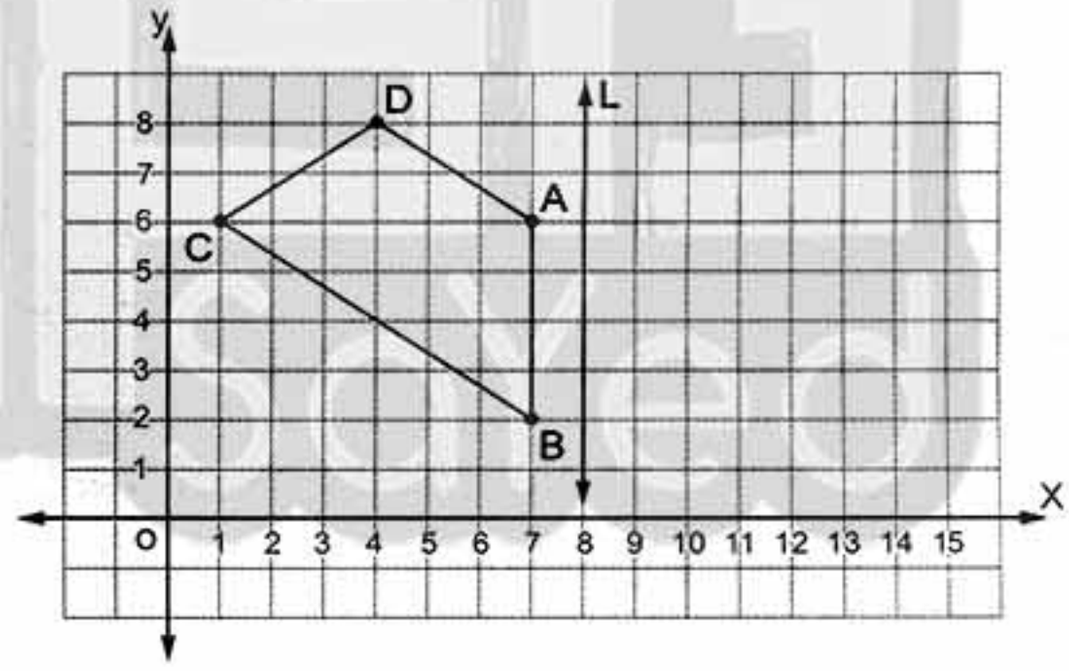
If L is the axis of reflection of the figure ABC. Find the image of the figure by reflection in the straight line L, **then complete.**

(a) The image of A by reflection in the straight line L is À (..... , ...)

(b) The image of B by reflection in the straight line L is B̀ (..... , ...)

(c) The image of C by reflection in the straight line L is C̀ (..... , ...)

4 **In the cartesian coordinates plane, from the following figure :**



First : Complete :

A (..... , ...)

B (..... , ...)

C (..... , ...)

D (..... , ...)

Second :

If L is the axis of reflection of the figure ABCD. Find the image of the figure by reflection in the straight line L, **then complete.**

(a) The image of A by reflection in the straight line L is À (..... , ...)

(b) The image of B by reflection in the straight line L is B̀ (..... , ...)

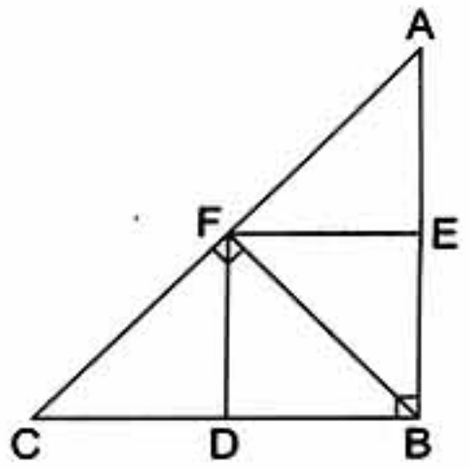
(c) The image of C by reflection in the straight line L is C̀ (..... , ...)

(d) The image of D by reflection in the straight line L is D̀ (..... , ...)

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Unit Four

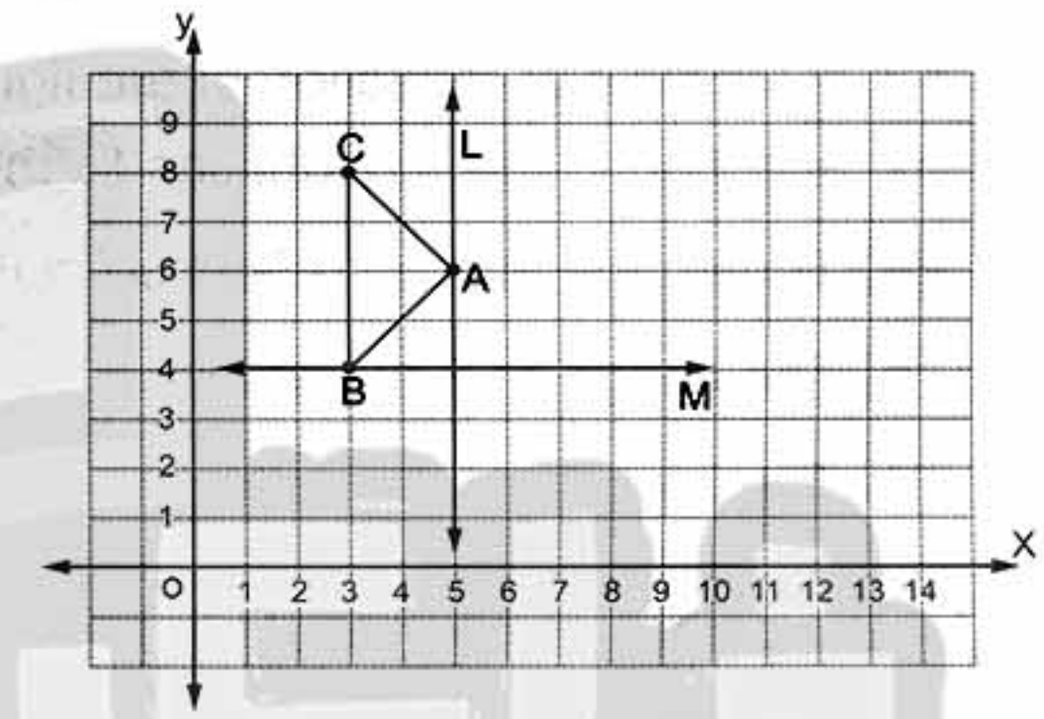
5 **In the opposite figure complete :**



(a) Δ BEF is the image of Δ AEF by reflection in ⟷

(b) Δ BDF is the image of Δ CDF by reflection in ⟷

6 **In the opposite figure , it represents the cartesion coordinates plane :**



(a) Determine the coordinates of the point A , B and C

(b) Draw Δ $\grave{A}$ $\grave{B}$ $\grave{C}$ the image of Δ ABC by reflection in the straight line L, then determine the coordinates of the vertices $\grave{A}$, $\grave{B}$ and $\grave{C}$

(c) Draw Δ $\acute{A}$ $\acute{B}$ $\acute{C}$ the image of Δ ABC by reflection in the straight line M and determine the coordinates of the vertices $\acute{A}$, $\acute{B}$ and $\acute{C}$.

7 **In the cartesian coordinates :**

(a) Determine the positions of the points A (8 , 5) , B (8 , 2) , C (5 , 2) , D (5 , 7).

(b) Draw the line segments $\overline{AB}$, $\overline{AD}$, $\overline{CD}$, $\overline{BC}$

(c) If $\overleftrightarrow{CD}$ is the axis of reflection of the figure ABCD. Determine the image of the figure using the suitable symbols, then determine each of the ordered pairs which represent the vertices.

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Test on Unit Four



1 Choose the correct answer from the given ones :

① The number of lines of symmetry of a rectangle is

(0 or 1 or 2 or 4)

② There are axes of symmetry of an equilateral triangle.

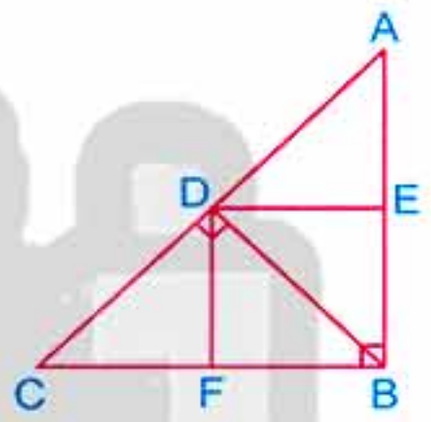
(0 or 1 or 2 or 3)

③ The isosceles trapezium has line(s) of symmetry.

(0 or 1 or 2 or 5)

④ **In the opposite figure :**

The image of Δ AED by reflection across $\overleftrightarrow{DE}$ is



(Δ BED or Δ BFD or Δ DFC or Δ BDC)

⑤ The regular hexagon has axes of symmetry.

(0 or 2 or 6 or 4)

⑥ The shown transformation is called



(reflection or rotaion or translation)

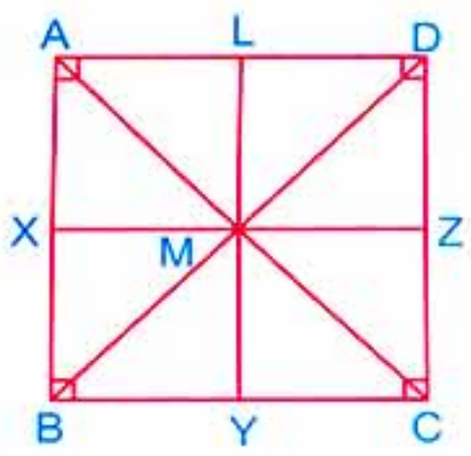
2 Complete each of the following :

⑦ The symmetry axis divides the figure into two halves.

⑧ **In the opposite figure :**

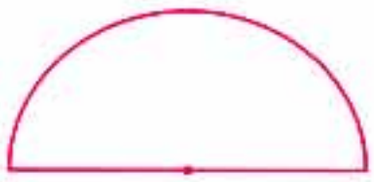
Δ ALM is the image of Δ DLM by reflection across $\longleftrightarrow$

and Δ is the image of Δ BXM by reflection across $\overleftrightarrow{XM}$



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(9) A diagonal of the rectangle divides it into two triangles, but it is not for the rectangle.

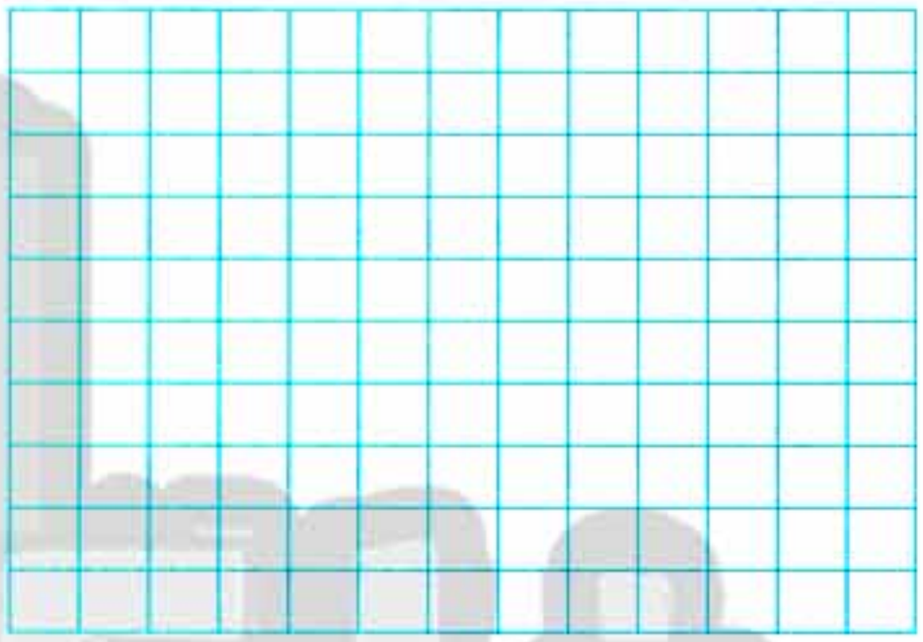
(10) The figure  has line(s) of symmetry.

3 Answer the following :

(11) On a coordinate plane , draw the figure ABCD where A (1 , 1) , B (4 , 1) , C (4 , 3) and D (1 , 3) , then find :

(1) The length of $\overline{AB}$

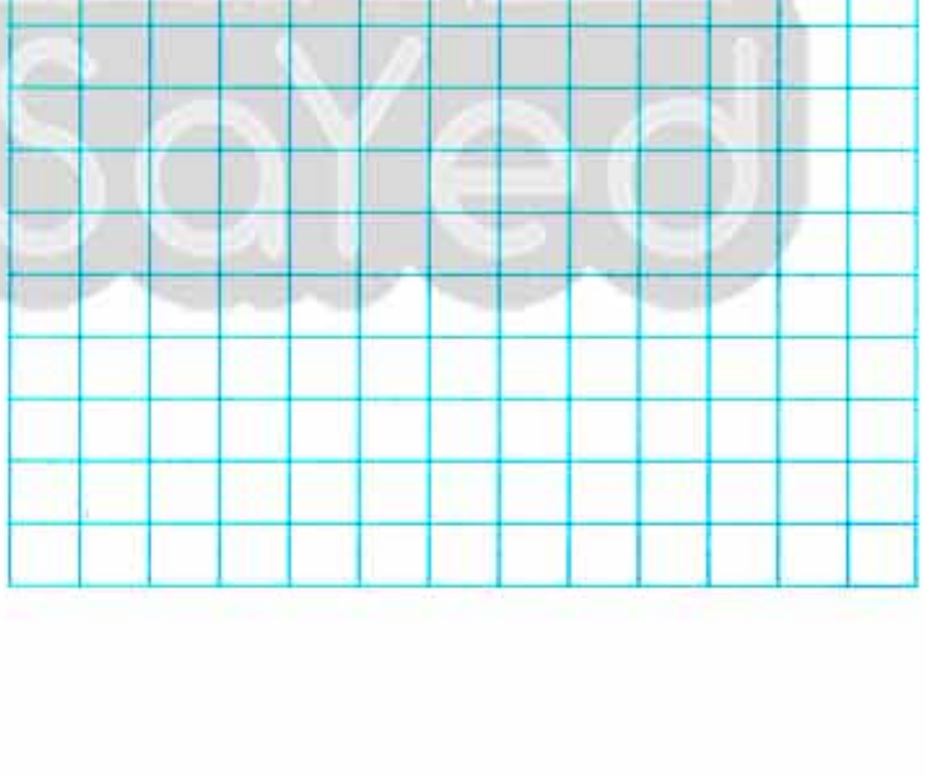
(2) The name of the figure ABCD



.....

.....

(12) On the coordinate plane , draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the triangle ABC by reflection across $\overleftrightarrow{BC}$



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Unit Five

Statistics

Lesson 1 : **Collecting and organizing data.**

Lesson 2 : **Representing data by the histogram and the frequency polygon.**

Lesson 3 : **Representing data using the pie graphs.**

Lesson 4 : **Reading tables and graphs.**

RaNia SaYed



A general exercise from the school book is given at the end of the unit.

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Unit Five

Lesson 1 Collecting and organizing data

- There are many ways to collect data, we can collect data using counting, measuring, carrying out a survey and so on.
- After collecting data we can organize it by recording it in tables as simple frequency table or a cumulative frequency table with sets.
- In this lesson we will learn how to organize data using "simple frequency table" and "cumulative frequency tables with sets".

First Simple frequency table

We use this table when there are small numbers of items with small ranges as in the following example :

Example 1

Hesham watched the weather forecast daily through November (30 days) and he recorded in the following table the maximum temperature in Cairo governorate :



22	21	23	22	20	23	22	23	23	22
24	23	23	24	25	25	25	23	23	23
24	24	24	20	22	20	22	23	19	21

Make a simple frequency table.

Solution

[1] Determine the minimum temperature , which is 19 and the maximum temperature , which is 25 and determine the difference between them which is 6

This difference "between the maximum and the minimum" values is called the **range**.

[2] We notice that this range is small , so we can make a table showing us the number of days , which have the same temperature. This table consists of three columns as follows :

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- **The first column :**

 We write in this column the temperature in an ascending or descending order.

- **The second column :**

 It is called tallies. In this column , we write a mark « / » for each value. It is usual to write the fifth one as 𝍸 as this makes it easier to find large totals. The sign (𝍸) is called a package and each of these packages contains 5 tallies.

- **The third column :**

 After counting the tallies in the second column , we put this number in the third column and we call it frequency "This number means the number of days in which the temperature are the same".

The temperature	Tallies	Number of days (frequency)
19	/	1
20	///	3
21	//	2
22	𝍸 /	6
23	𝍸 𝍸	10
24	𝍸	5
25	///	3
Total		30

[3] Delete the tallies column from that table to get the "simple frequency table." It can be written vertically of horizontally.

The following is the horizontal form of the simple frequency table :

The temperature	19	20	21	22	23	24	25	Total
Frequency	1	3	2	6	10	5	3	30

Second Cumulative frequency table with sets (intervals)

We use this table when there are large number of items and also the range is large. In this case , we distribute the range to a suitable number of sets , as shown in the following example :

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Example 2



Ashraf collect the marks of 54 pupils in the math exam , where the maximum mark is 60 , and record them in the following table :

42	41	43	27	$37\frac{1}{2}$	48	45	58	24	43	50
48	54	36	59	45	40	45	51	35	$39\frac{1}{2}$	46
38	40	36	45	35	30	20	36	40	50	54
47	47	47	46	39	$44\frac{1}{2}$	42	$42\frac{1}{2}$	56	48	45
29	55	30	25	34	42	32	51	28	44	

Make a cumulative frequency table with sets (intervals).

Solution

- Since the minimum mark is 20 and the maximum is 59 ,

 then , the range = 59 – 20 = 39 ,

 These marks may be distributed in 10 sets (intervals) , the length of each is 4 , we get the following sets :

- **The first set :** includes the pupils whose marks are from 20 marks to less than 24 marks , which is written (20 –)
- **The second set :** includes the pupils whose marks are from 24 marks to less than 28 marks , which is written (24 –)
- **The third set :** includes the pupils whose marks are from 28 to less than 32 marks , which is written (28 –) and so on until we reach to the tenth set.
- **The tenth set :** includes the pupils whose marks are from 56 marks to less than 60 marks and is written (56 –)
- **So we can make a table showing us the number of pupils who got each of those marks as the following table :**

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Lesson one

Sets of marks	Tallies	Number of pupils (frequency)
20 –	/	1
24 –	///	3
28 –	////	4
32 –	////	4
36 –	///// //	7
40 –	///// /////	10
44 –	///// ///// //	12
48 –	///// //	7
52 –	///	3
56 –	///	3
Total		54

- **Delete the tallies column from the table to get the frequency table with sets. It can be written vertically or horizontally.**
 The following is the horizontal form of the cumulative frequency table with sets :

Sets	20–	24–	28–	32–	36–	40–	44–	48–	52–	56–	Total
Frequency	1	3	4	4	7	10	12	7	3	3	**54**

Try by yourself

The following is the weights of 50 persons :

52	35	40	57	43	40	36	49	43	58
47	48	51	30	59	36	45	41	44	37
42	54	38	55	42	47	46	34	53	44
47	32	41	62	50	39	58	46	43	49
40	41	64	44	54	45	38	40	48	41

Form the cumulative frequency table with sets using the following two tables :

Sets	Tallies	Frequency
30 – 35 – 40 – 45 – 50 – 55 – 60 –		
Total		50

Sets								Total
Frequency								50

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Unit Five

From the school book

Exercise 8 Collecting and organizing data

1 The following table shows the favourite subject for some pupils. Complete the table and use data to answer the following questions :

(a) What is the most popular subject ?

(b) What is the least popular subject ?

(c) Which subject did more pupils choose mathematics or science ?

(d) How many pupils answered the survey ?

(e) If 3 more pupils choose history , how many total pupils would have chosen history ?

Subject	Tally	Frequency
Mathematics	𝍸 ////	
Science	𝍸 ///	
History	𝍸 𝍸 //	
Art	𝍸 𝍸 𝍸 /	
Music	𝍸 𝍸	

2 The following table shows the preferred means of transport for some pupils. Complete the table and use data to answer the following questions :

Preferred means of transport	Tally	Frequency
Taxi		9
Bicycle	𝍸 𝍸 𝍸 𝍸 ///	
Bus		18
Train		14

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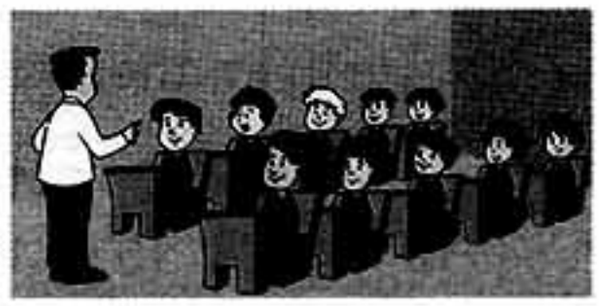


Lesson one

(a) What is the most popular means of transport ?
(b) What is the least popular means of transport ?
(c) Did more pupils choose bicycle or bus ?
(d) How many pupils answered the survey ?

3 The following table represents the estimation for a group of students (20 students) in mathematics :

good	pass	pass	good	weak
excellent	v.good	pass	v.weak	v.good
good	weak	good	pass	pass
good	pass	weak	good	pass



The required is forming a frequency table of these data.

4 The table below represents the extra wages of 30 workers. The required is forming a frequency table for these wages.

90	85	88	86	88	90
85	87	87	87	86	85
89	85	86	85	90	90
86	88	89	87	85	86
88	90	90	87	88	85



5 The following data shows the ages of 60 students.
Make a frequency table of the ages of these students :

15	18	18	17	15	16	18	19	16	17	18	16
17	15	14	19	18	18	17	16	14	15	17	16
16	15	15	17	14	17	16	16	16	15	14	17
19	20	15	14	15	16	17	18	17	18	16	17
17	16	16	17	17	17	18	15	17	16	14	15



6 The following data represents the maximum temperature in 16 Arab countries in one day :

10	16	22	13	22	11	23	19
17	25	12	28	24	29	22	27



Make the frequency table by using the sets 10 – , 15 – , 20 – , 25 –

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7 The following data shows hours of work for 30 workers during a week :

40	17	50	82	64	28	66	52	36	70
71	46	42	56	48	23	64	39	30	60
58	52	33	54	68	50	78	62	45	44



Make the cumulative frequency table , using the sets :
15 – , 25 – , 35 – , ···

8 The following data shows the marks of 40 pupils of the fifth primary grade in mathematics test (the maximum mark is 20) :

7	11	7	13	14	3	18	13	10	14
16	8	15	12	5	15	11	12	6	11
8	9	15	8	15	14	7	10	14	19
10	7	2	10	12	4	11	17	13	15



Make a cumulative frequency table with sets.

9 The following data shows the number of holidays that 40 workers of a factory have got during a year :

12	27	14	25	13	22	14	26	11	15
30	21	15	22	23	28	16	21	30	25
27	16	22	20	26	30	21	15	16	23
15	30	28	21	24	15	27	30	21	28



Make a cumulative frequency table with sets.

10 🕮 The following are the marks of 32 students in the final math exam for the first term :

25	30	38	41	47	48	50	32
37	46	48	26	38	40	42	30
35	50	40	37	39	48	49	47
36	45	35	42	41	40	36	44

First : Complete : The lowest mark is

the highest mark is

Second : Think of a method to display those marks in suitable sets.

Form the cumulative frequency table with sets for these data.

Can you display those data in another way ? Explain your answer.

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Lesson one



Challenge

11 The following table shows the number of canned drinks sold by a shop in five days :

Saturday	Sunday	Monday	Tuesday	Wednesday
▮▮▮▮	▮▮▮▮ ▮▮▮▮	▮▮▮▮ ▮▮▮▮ ▮▮	▮▮▮▮ ▮	▮▮▮▮ ▮▮▮▮ ▮▮

Each ▮ represents 7 cans.

(a) Complete the following frequency table :

	Saturday	Sunday	Monday	Tuesday	Wednesday
Number of canned drinks sold					

(b) What is the total number of cans sold by the shop ?

(c) What is the total profit of the shop , if the profit gained on each drink is 42 piaster ?

(d) If the total number of cans sold by the shop in Friday 147 , how many ▮ must be drawn in the table ?

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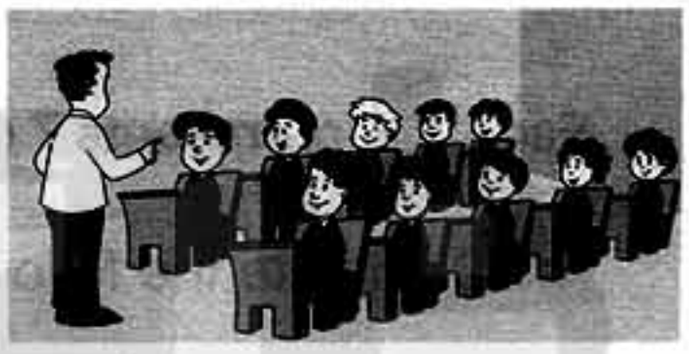
Unit Five

Lesson 2 Representing data by the histogram and the frequency polygon

- We studied before how to organize data using the simple frequency table and cumulative frequency table with intervals.
- We can represent the simple frequency table using the bar graph and the broken line, we studied that in the previous years.
- In this lesson we will study how to represent cumulative frequency table with intervals using the histogram and the frequency polygon as in the following example.

Example

The following table shows the frequency distribution of marks of 40 pupils in the mathematics examination.



Draw :

[a] The histogram.

[b] The frequency polygon.

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	9	7	40

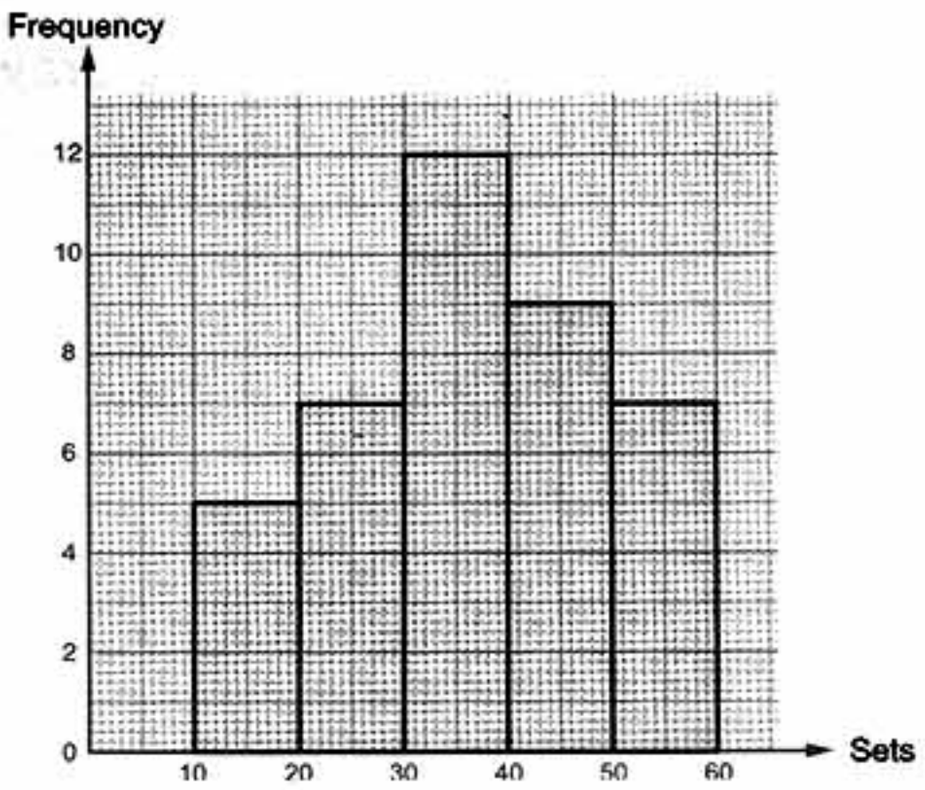
Solution

a. The histogram :

To draw the histogram, follow the following steps :

[1] We draw two perpendicular axes. The horizontal axis represents sets and the vertical axis represents frequencies by using a suitable drawing scale.

[2] We draw a rectangle whose base is the first set (10 –) and its height is equal to the frequency in this set which is 5



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[3] We draw the second rectangle (beside the first one) whose base is the second set (20 –) and its height is equal to the frequency in this set , which is 7

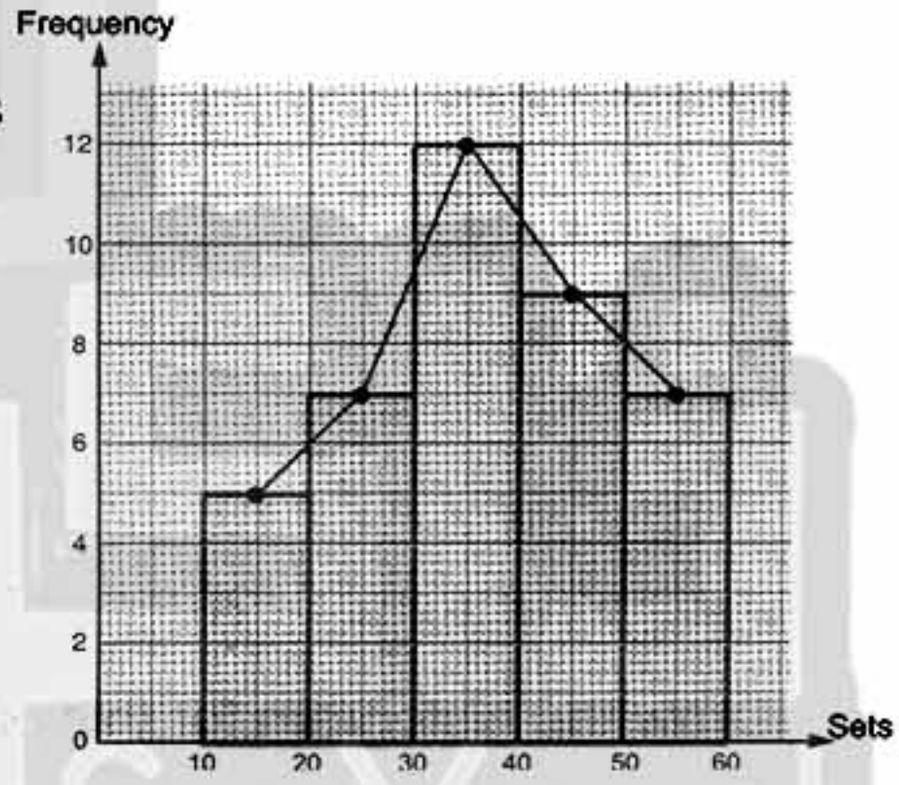
[4] We go on drawing rectangles till the last set. At the end, we will find the shape as in the figure, which is the histogram representing this distribution.

b. The frequency polygon :

To draw the frequency polygon for this distribution, follow the following steps :

[1] Draw the histogram as the previous , then determine the points which are the midpoints of the upper bases of the rectangles of the histogram.

[2] Join every two consecutive points with a line segment , so we get a broken line called a frequency polygon as shown in the opposite figure.



Note that :

We can draw the frequency polygon without drawing the histogram by determining the centres of the sets using:

$$\text{The centre of the set} = \frac{\text{starting point + ending point}}{2}$$

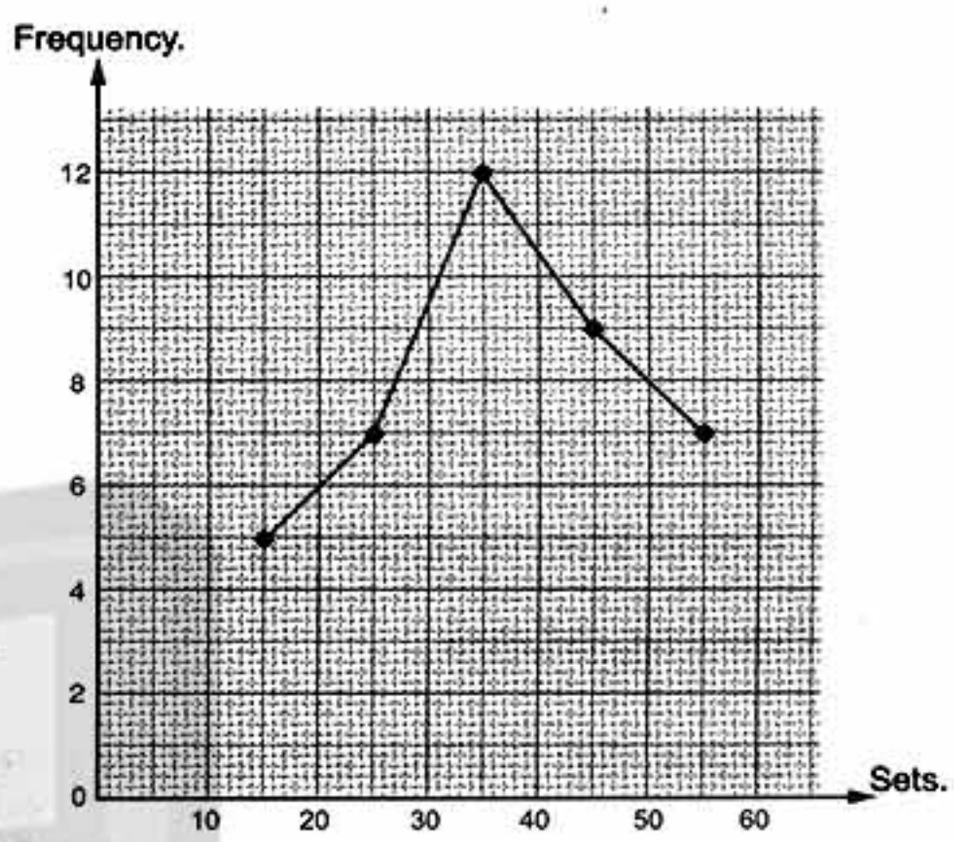
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Unit Five

For example : The centre of the first set = $\frac{10 + 20}{2}$ = 15

The centre of the second set = $\frac{20 + 30}{2}$ = 25 and so on.

* We determine the points on the drawing vertically upon these centres where each point is distant from the horizontal axis that equals the frequency of the set.
* Join every two consecutive points with a line segment so that we get a broken line which is the required frequency polygon as in the opposite figure.



Try by yourself

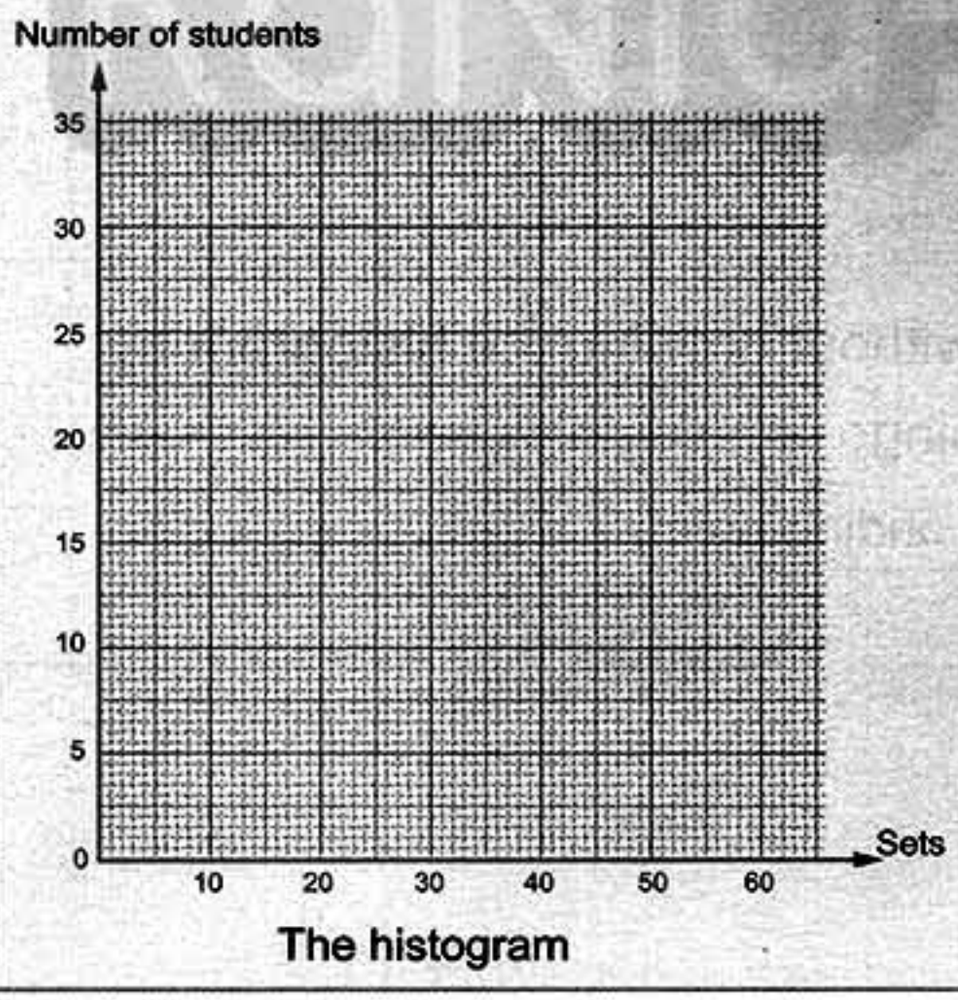
The following table shows the frequency distribution of 120 students' marks in a certain examination .

Sets of marks	10 –	20 –	30 –	40 –	50 –	Total
Number of students	20	35	30	25	10	120

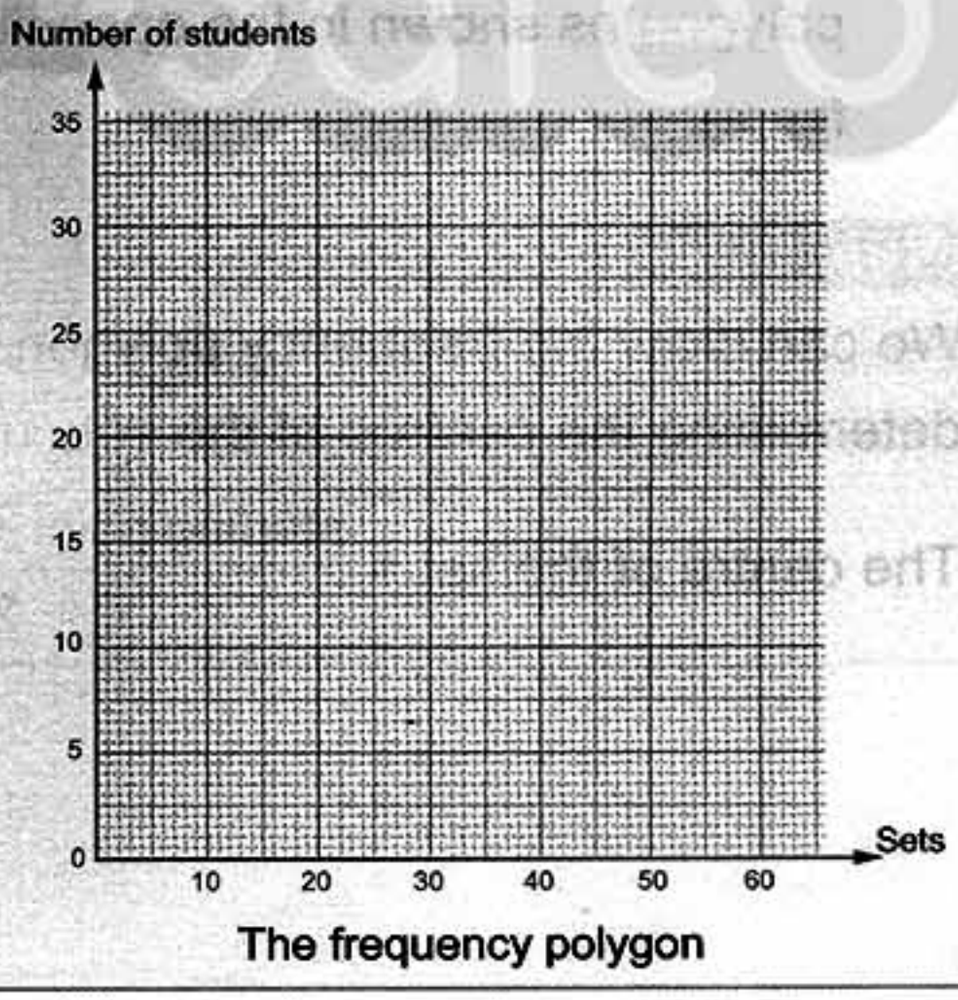


[a] Draw the histogram for this data.

[b] Draw the frequency polygon.



The histogram



The frequency polygon

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Lesson two

From the school book

Exercise 9 — Representing data by the histogram and the frequency polygon

1 The following table shows the number of hours that a set of 50 students study in a day :

Sets	2 –	4 –	6 –	8 –	10 –	Total
Frequency	8	13	15	13	1	50



Draw the histogram for this data.

2 The following data represents the weekly wages of 56 workers in one factory :

Sets	30 –	40 –	50 –	60 –	70 –
Frequency	6	10	20	12	8



Draw the histogram for this data.

3 The following data represents the marks in the mathematics test for students in one classroom :

Sets	0 –	10 –	20 –	30 –	40 –	50 –
Frequency	6	10	15	20	8	4



(a) Draw the histogram for this distribution.

(b) Complete :

[1] The number of students whose marks are less than 20 = ...

[2] The number of students whose marks are 40 and more = ...

4 The following table represents the marks of 50 students in the math exam in a month, where the full mark is 50

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50



Draw the frequency polygon which represents the given data.

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LESSON 2

5 The following table shows the frequency distribution of the ages of 40 students in one school :

The ages	6 –	8 –	10 –	12 –	14 –	Total
Number of students	8	9	6	12	5	40



Draw the frequency polygon for this distribution.

6 Draw the frequency polygon for the following frequency distribution :

Sets	10 –	12 –	14 –	16 –	18 –	20 –	Total
Frequency	2	5	7	11	6	4	35

7 The following table shows the recorded temperatures in 40 cities on a day :

Temperatures	20 –	22 –	24 –	26 –	28 –	Total
Number of cities	7	9	11	8	5	40



Required :

a The number of cities with temperatures less than 24 degrees Celsius.

b Draw each of the histogram and the frequency polygon.

8 The following frequency distribution shows the marks of a group of students in an exam :



Sets	5 –	10 –	15 –	20 –	25 –	30 –	35 –	Total
No. of students	3	6	8	12	10	6	5	50

a What is the number of students who got 30 marks or more ?

b Draw the frequency polygon for that distribution.

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Lesson two

9 🕮 The following table shows the frequency of the marks of some students in Mathematics :



Sets	5 –	10 –	15 –	20 –	25 –
Frequency	𝍸	𝍸 𝍸	𝍸 𝍸 𝍸	𝍸 //	//

(a) Rewrite the previous frequency table representing the frequencies by numbers.

(b) What is the number of students who got marks less than 15

(c) Draw the frequency polygon for that distribution.

10 Suppose that the heights of 40 boys in a football club in centimetres are as follows :



160	168	175	165	188	170	163	184	174	168
164	171	182	167	161	173	182	181	189	184
174	168	165	175	162	161	169	178	185	179
180	162	160	174	187	166	165	181	163	166

(a) Complete the following frequency table :

Sets	160 –	165 –	170 –	175 –	180 –	185 –
Frequency						

(b) Draw a histogram and a frequency polygon in the same figure.

11 A class of 30 pupils had a 10 - question task. The results were :

6	7	6	5.5	7	5	7	10	8	6
8	7	6.5	10	6	7	9	10	8	8.5
8	9.5	9	7	7.5	7.5	9	5	9	8

(a) Arrange these scores in a frequency table using the sets : 5 – , 6 – , ... , 10 –

(b) Draw a histogram and a frequency polygon.



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12 The ages of the employees in a company , rounded to the nearest year , are :



17	35	32	25	30	19	42	20	62	17
38	39	41	24	18	20	38	21	54	19
27	20	30	59	21	35	40	56	48	33

(a) Using a class interval of 10 , beginning with 15 – , 25 – , ····
Construct a frequency table.

(b) Draw a histogram for the ages listed above.



Challenge

13 Find x and y in the following data, then draw the frequency polygon for this distribution :

Sets	10 –	20 –	x	40 –	50 –	Total
Frequency	5	8	11	9	y	40

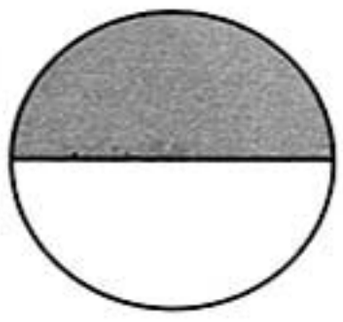
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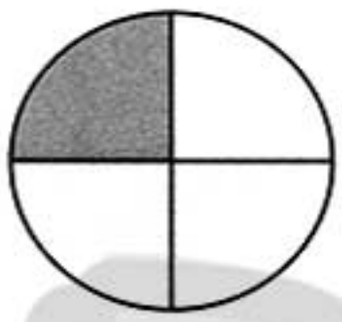


Lesson 3 Representing data using the pie graphs

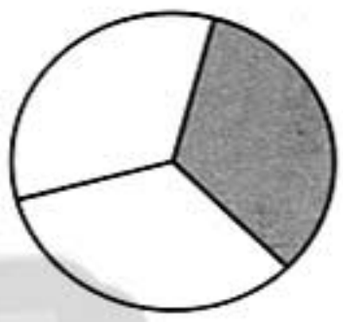
- We have learnt before that we can represent a fraction using a coloured part in a circle as the following.



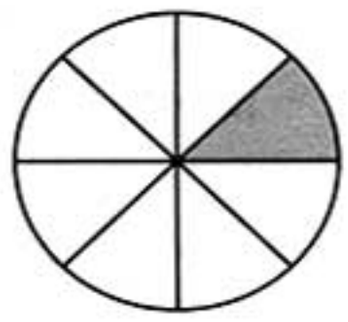
the coloured part represents $\frac{1}{2}$ of a circle



the coloured part represents $\frac{1}{4}$ of a circle



the coloured part represents $\frac{1}{3}$ of a circle

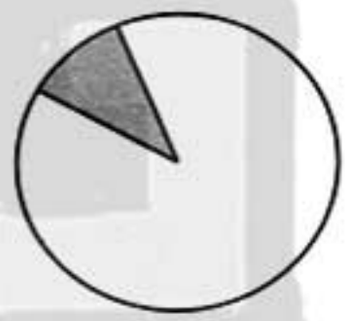


the coloured part represents $\frac{1}{8}$ of a circle

- Each coloured part of the previous is called a circular sector.

What is the circular sector ?

The circular sector is a part of a circular region which is bounded by an arc of the circle and two radii passing through the endpoints of this arc.



Example 1

The following table shows the number of hours that Marwa studied in different subjects in a week :



Arabic	Maths	Science	English	Total
6	12	3	3	24

Represent this data by a pie graph.

Solution

The total hours that Marwa studied is distributed a mong different items (Arabic , Maths , Science and English) , to represent these data by the pie graph we do as follows :

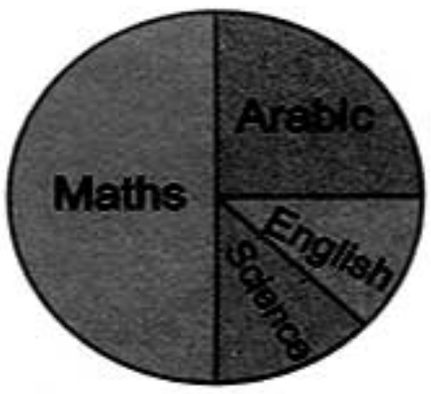
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First : We find the fraction that represents each item as follows :

$$\text{The fraction that represents the item A} = \frac{\text{The value of item A}}{\text{Total value of all items}}$$

* Arabic $= \frac{6}{24} = \frac{1}{4}$
* Maths $= \frac{12}{24} = \frac{1}{2}$
* Science $= \frac{3}{24} = \frac{1}{8}$
* English $= \frac{3}{24} = \frac{1}{8}$



Second : We draw a suitable circle and represent each item by a circular sector according to the fraction representing it.

Example 2

When 36 students were asked about the most favourite sport , the following data are obtained

- $\frac{1}{2}$ of students like football.
- $\frac{1}{4}$ of students like swimming.
- $\frac{1}{4}$ of students like volleyball.



* Represent that given data using a pie graph.
* What is the number of students like swimming.

Solution

*



* The number of students like swimming
 $= \frac{1}{4}$ of the total number of students.
 $= \frac{1}{4} \times 36 = 9$ students.

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Lesson three

Try by yourself

This table shows the distribution of 100 pupils according to the kind of sports they play :



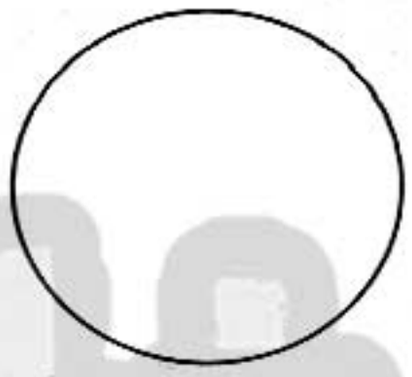
Sports	Football	Basketball	Tennis
Number of pupils	50	25	25

Represent these data by a pie chart.



Solution

- The fraction that represents football = $\frac{\ldots\ldots}{\ldots\ldots} = \frac{\ldots\ldots}{\ldots\ldots}$
- The fraction that represents basketball = $\frac{\ldots\ldots}{\ldots\ldots} = \frac{\ldots\ldots}{\ldots\ldots}$
- The fraction that represents tennis = $\frac{\ldots\ldots}{\ldots\ldots} = \frac{\ldots\ldots}{\ldots\ldots}$



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Unit Five

From the school book

Exercise 10 Representing data using the pie graphs

1 An employee spends his salary as follows :

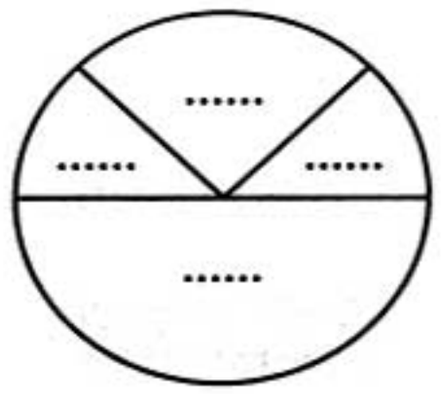
L.E. 200 for clothes.

L.E. 800 for food.

L.E. 400 for transportation and medicine.

L.E. 200 for renting an aportment.

Graph that data on the opposite circle.



2 The following table shows the favourite TV programs for 40 pupils :

Sports	News	Series	Movies
10	5	5	20



Represent this data by a pie graph.

3 The table shows the number of tickets sold by 3 cinemas in a certain evening :

Cinema (1)	Cinema (2)	Cinema (3)
150	150	300

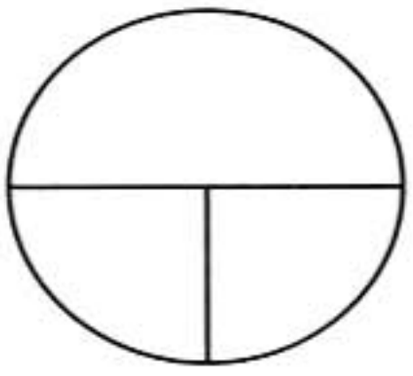


(a) Represent these data by a pie graph.

(b) What is the fraction of the tickets sold came from cinema 1 ?

4 The following table shows the number of students who practice sports. Represent these data using pie graph on the opposite figure :

Game	Football	Basketball	Volleyball
Number	20	10	10



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5 A group of 120 pupils were asked to choose their favourite place of interest among 4 places, the table shows their choices :

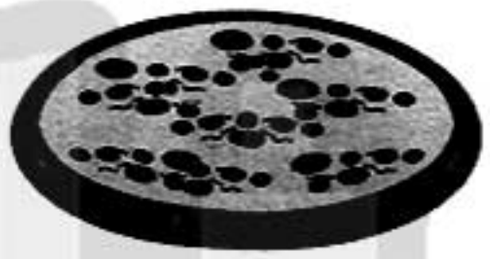


Zoo	Bird park	Science centre	Alexandria library
60	15	15	

(a) Complete the table.

(b) Represent these data by a pie graph.

6 🕮 Ahmed, Hossam and Hanan have bought Pizza for dinner and paid L.E. 24, Ahmed paid L.E. 12, Hossam paid L.E. 8, and Hanan paid the rest. The Pizza has been divided into sectors according to the amount of money each paid. Graph the given data.

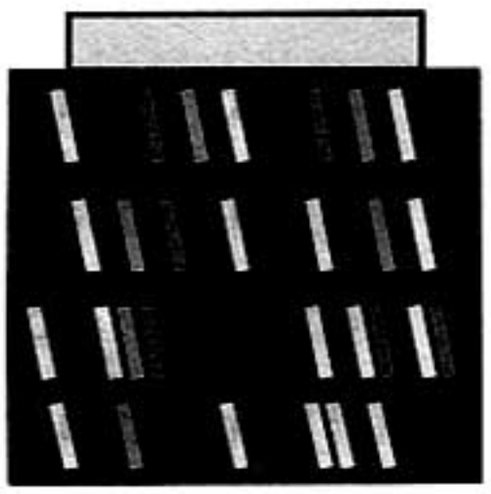


7 100 pupils is tested in maths, the number of succeeded and failed pupils is represented in the opposite graph.

What is the number of succeeded pupils.



8 🕮 A librarian made an inventory of the books in his library and their types. He found the following : $\frac{1}{4}$ of the books are religious, $\frac{1}{4}$ of the books are literary, $\frac{1}{2}$ of the books are scientific. Graph that given data using a pie graph. If the total of books was 800, find the number of each type of books.



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9 🕮 When some students were asked about the most popular TV programs, the following data were extracted :



$\frac{1}{2}$ of the students like to watch sports programs.

$\frac{1}{4}$ of the students like to watch cultural programs.

$\frac{1}{8}$ of the students like to watch Arabic and foreign movies.

$\frac{1}{8}$ of the students like to watch news.

(a) Represent that given data using a pie graph.

(b) If the number of students in the class was 48 students. What is the number of students who prefer watching each type of programs ?



Challenge

10 Ahmed had L.E. 900 , he divided the sum of money among his mother and 3 sisters. The following table shows the amount of money that each of them received :



Mother	Nancy	Mai	Sara
$\frac{1}{2}$	$\frac{1}{8}$		$\frac{1}{4}$

(a) Complete the table.

(b) Represent these data by a pie graph

(c) How much money did Mai receive ?

(d) How much money did Ahmed's mother receive ?

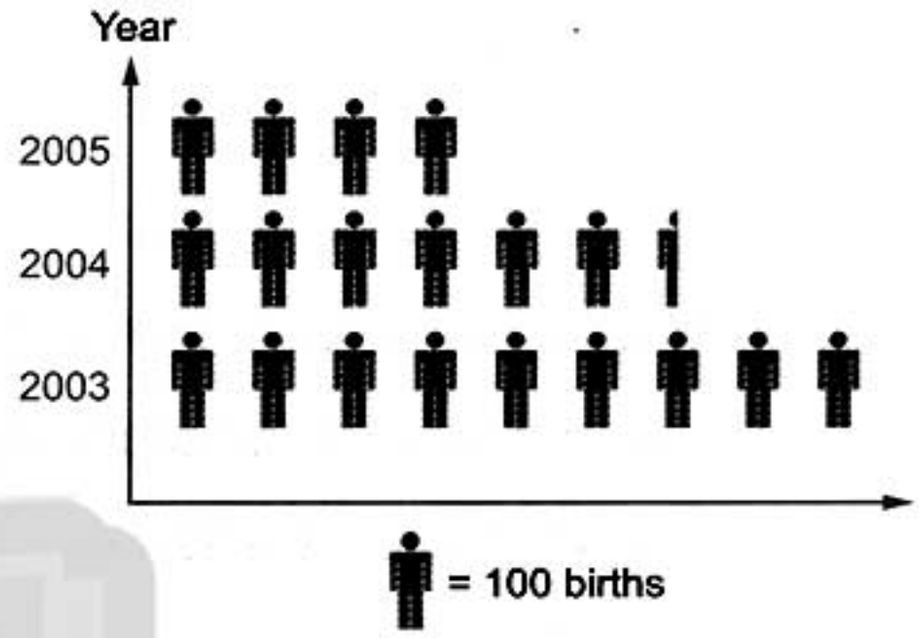
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Lesson 4 Reading tables and graphs

Example 1

The opposite pictograph represents the number of babies who were born at a hospital from 2003 to 2005 from the pictograph find :



[a] The number of births at that hospital in 2004

[b] The decrease in the number of births in 2005 compared to 2003

Solution

[a] The number of births of that hospital in 2004

$= 100 \times 6 + 50 = 650$ births.

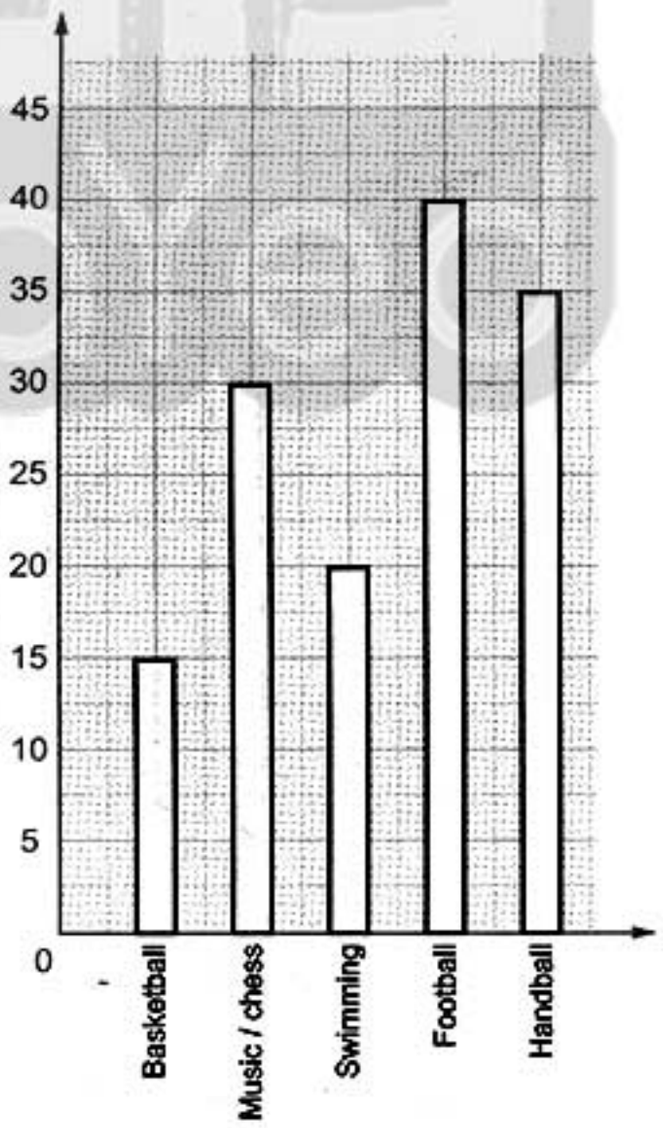
[b] The decrease in the number of births in 2005 compared to 2003

$= 900 - 400 = 500$ births.

Example 2

The opposite bar graph shows the number of pupils who participate in the school activities :

Answer the following questions :



[a] Which game is the most popular ?

[b] Which game is the least popular ?

[c] Which game is more popular, chess or swimming ?

[d] How many more pupils participated in football than in basketball ?

Solution

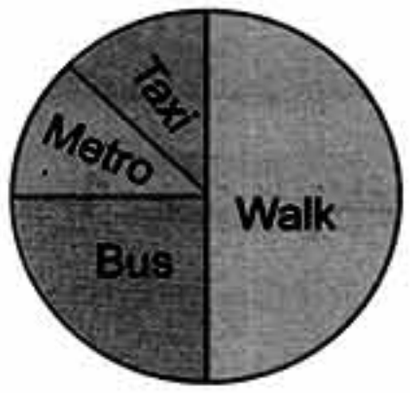
[a] Football **[b]** Basketball **[c]** Chess **[d]** 25 pupils

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Example 3

The opposite pie graph shows the results of a survey that was carried out to find out how students travel to school.



Answer the following questions :

[a] What is the most common method of travel ?

[b] What fraction of the students travel to school on foot ?

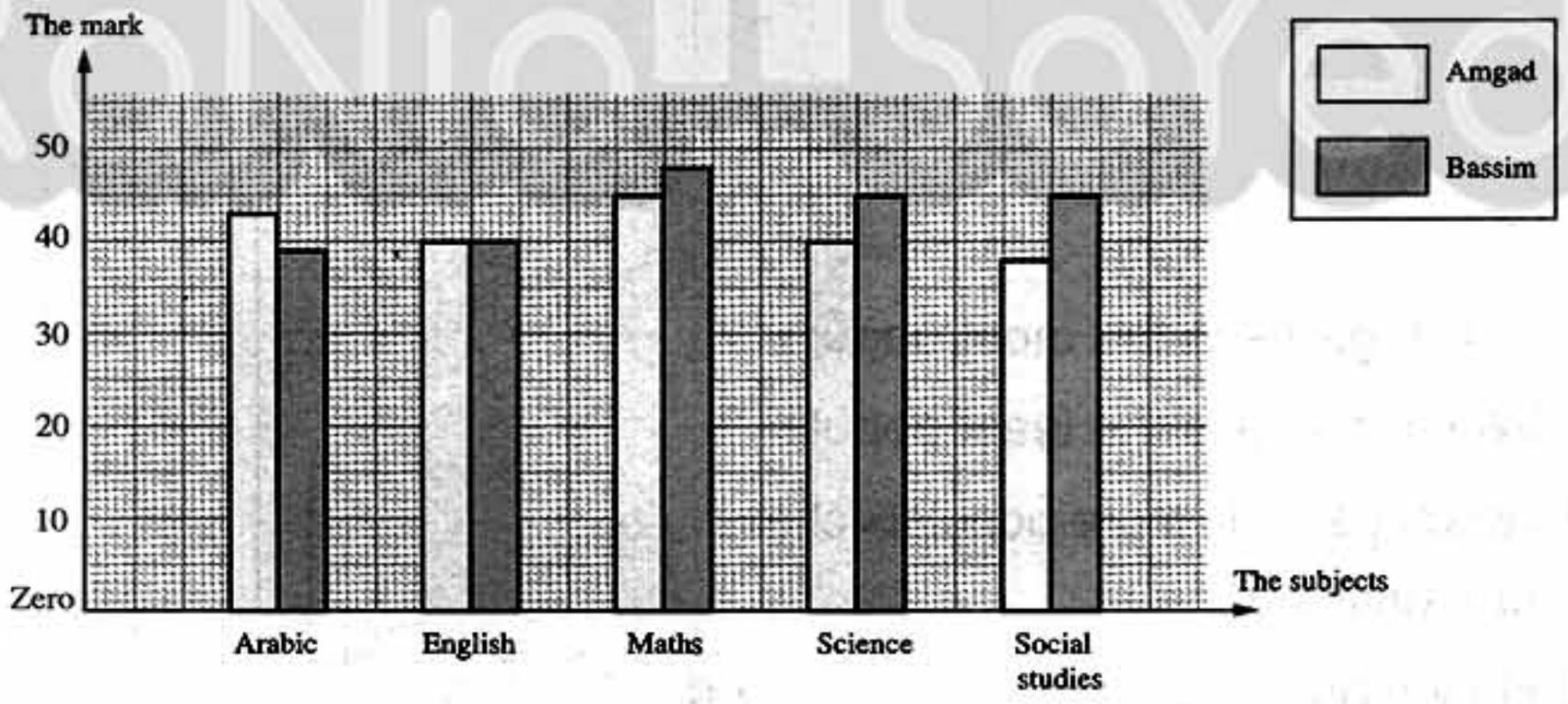
[c] If 10 students travelled by taxi, how many students took part in the survey ?

Solution

[a] Walk [b] $\frac{1}{2}$ [c] 80 students

Example 4

The following graph shows the marks obtained by Amgad and Bassim in some different subjects at the end of the year. Using the graph, complete the following :



[a] Amgad obtained the greatest mark in and Bassim in

[b] The two persons obtained the same mark in

[c] Amgad is better than Bassim in

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[d] The difference between the marks of Amgad and Bassim in Science is

[e] Bassim obtained more than 40 marks in each of , ... and

Solution

[a] Maths, Maths

[b] English

[c] Arabic

[d] 5

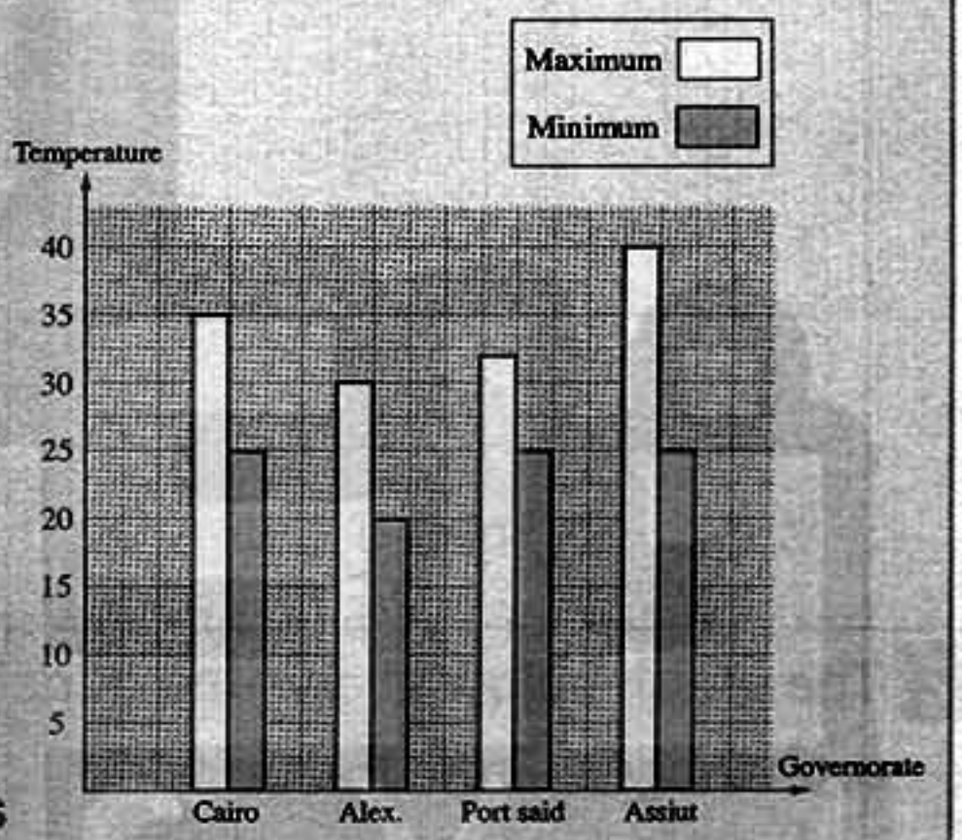
[e] Maths, Science, Social studies.

Try by yourself

The opposite graph shows :

The maximum and minimum of temperature degree in some governorates in Egypt in one day.

Using the graph to complete the following :



[a] The greatest maximum degree is in

[b] The smallest minimum degree is in

[c] The difference between the maximum degree in Cairo and Alex. is

[d] The difference between the maximum and minimum degree in Assiut is

[e] The minimum degree is equal in each of , ... and

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Unit Five

From the school book

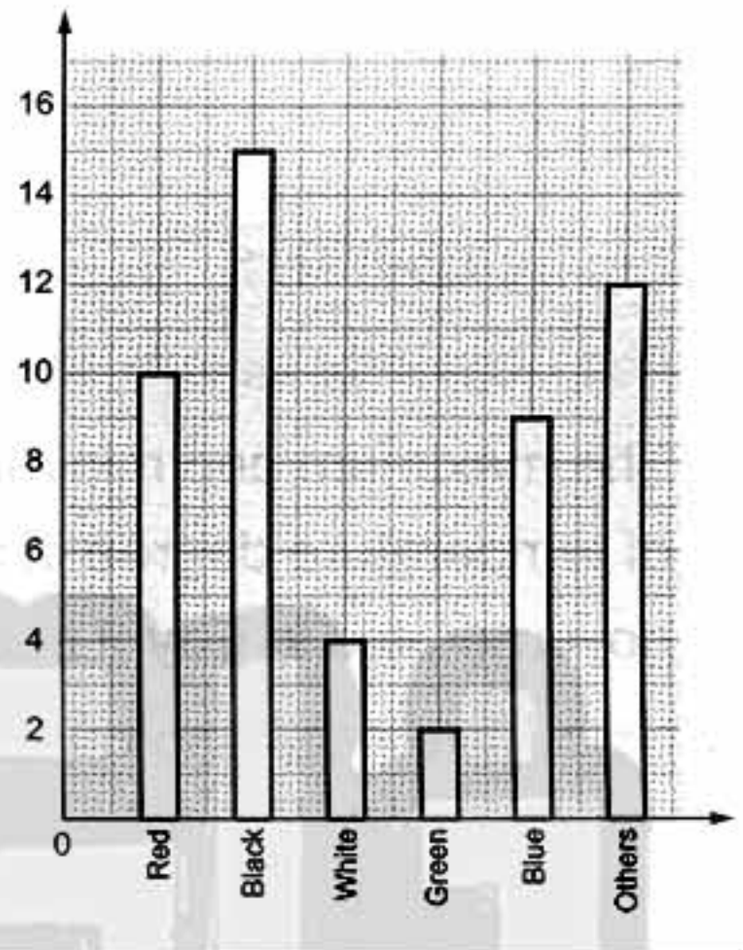
Exercise 11 Reading tables and graphs

1 Sarah conducted a survey of the cars passing her house.

The following bar graph represents the data :

(a) How many cars were black ?

(b) How many cars passed in total ?

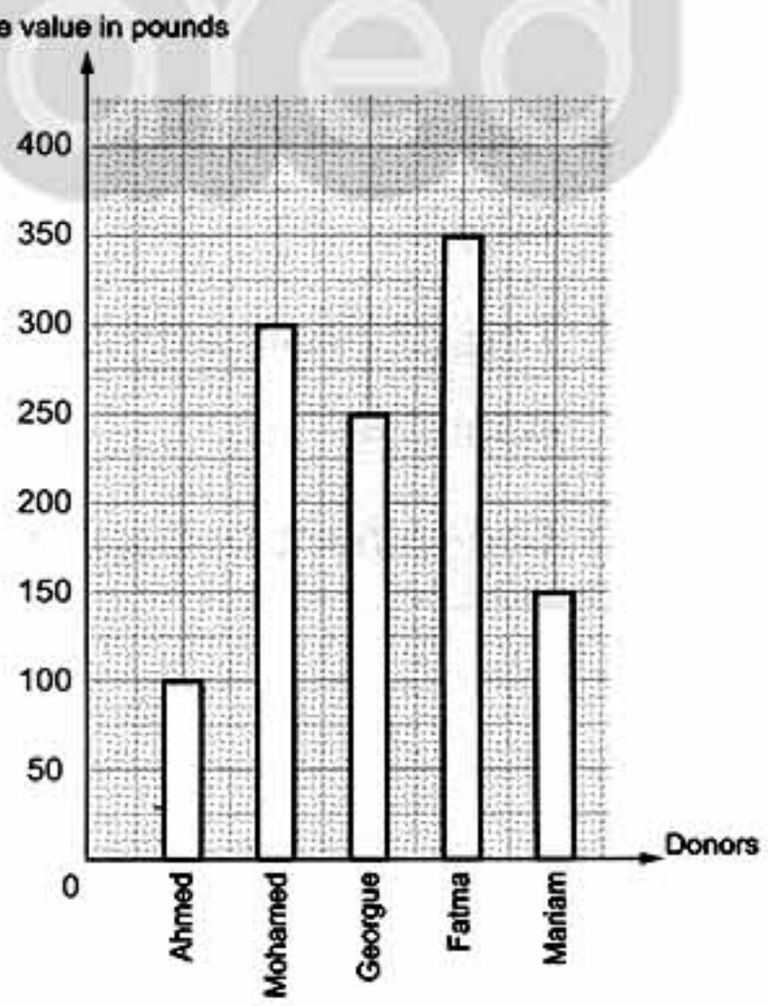


2 The graph below shows the donations of five citizens to one of the orphanages. From the drawing , complete :

(a) The greatest donation = ... pounds.

(b) The smallest donation = ... pounds.

(c) The difference between the greatest donation and the smallest donation = ... pounds.



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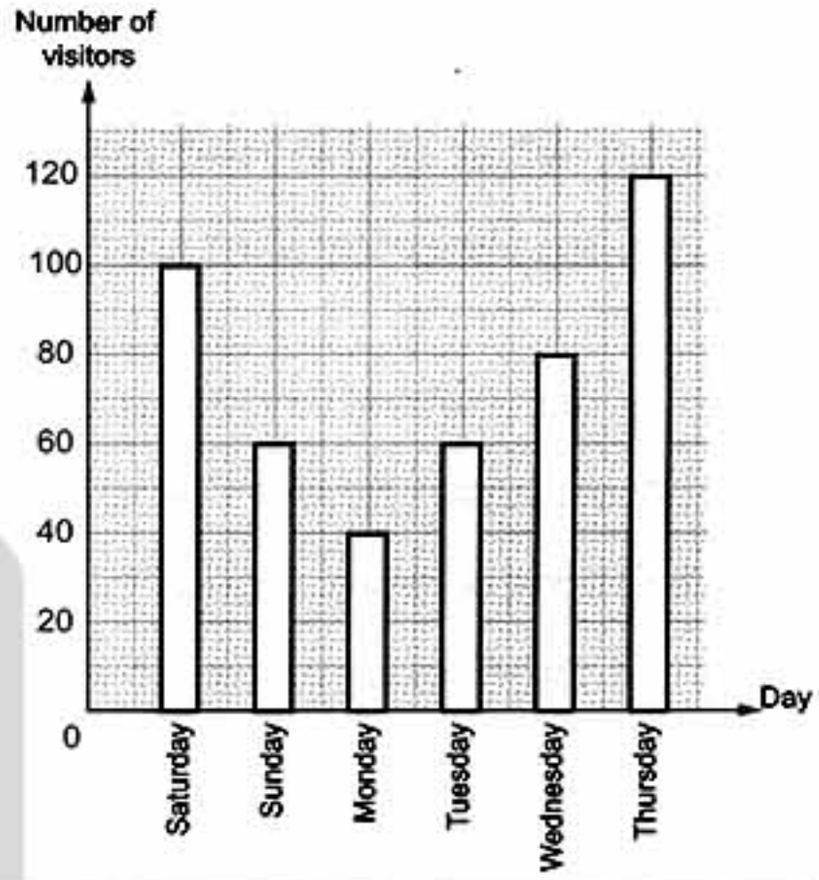
3 The following bar graph shows the number of visitors to Cairo Tower in 6 days. According to the figure, answer the following questions :

(a) What was the number of visitors on Wednesday ?

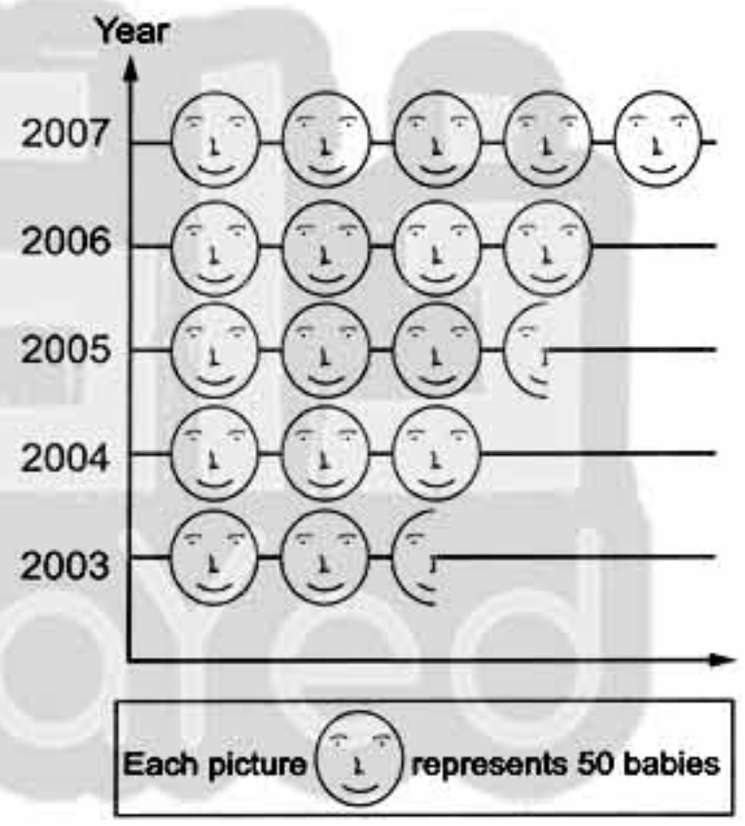
(b) On which day was the number of visitors the greatest ?

(c) On which day was the number of visitors the smallest ?

(d) On which days were the numbers of visitors equal ?



4 This pictorial represents the number of delivered babies by Dr. Shimaa. How many babies did she delivere in 2007 more than 2003 ?

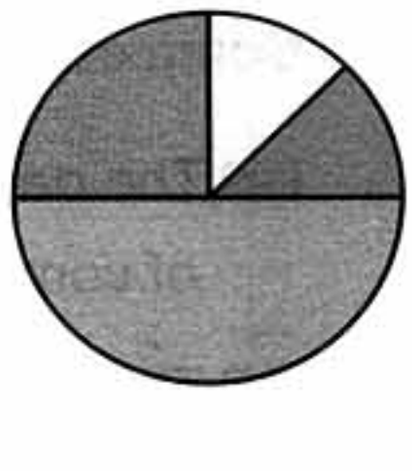


5 A farm has an area of 24 feddans planted with fruit, vegetables, flowers and palm trees, and it is represented by the opposite figure. Complete :

(a) The area planted with vegetables is 12 feddans and it is represented by the colour.

(b) The green sector represents the area planted with fruit and it has an area of feddans.

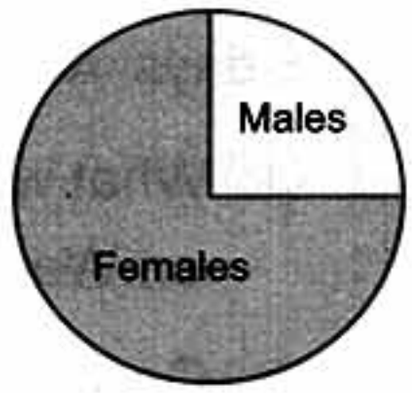
(c) The area planted with flowers = the area planted with palm trees = ... feddans.



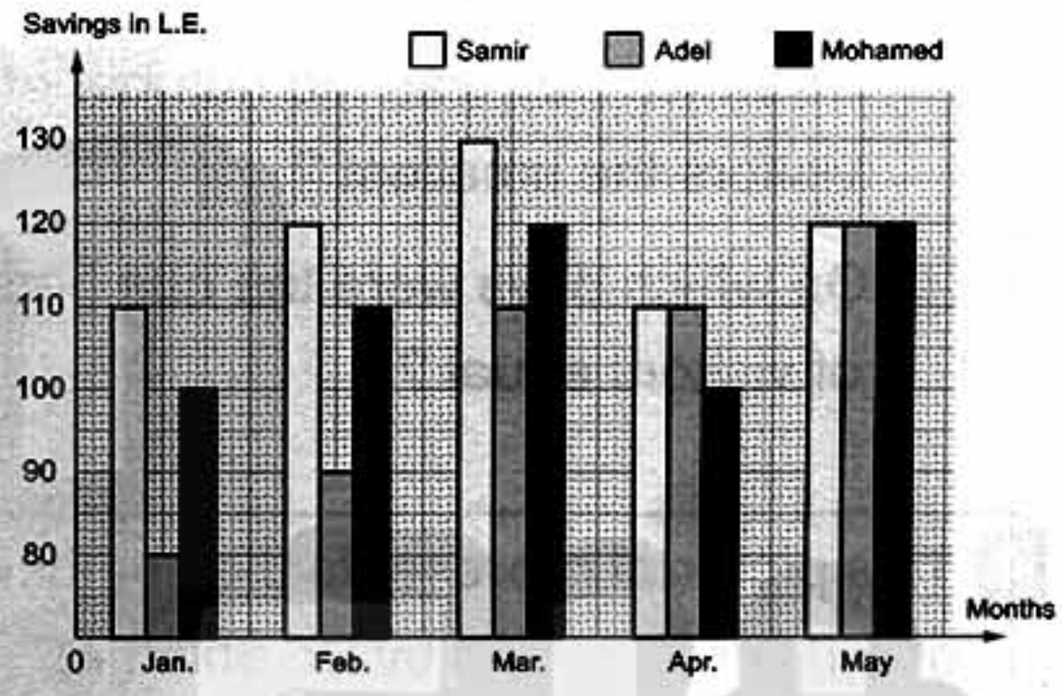
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6 📖 220 candidates have applied for a test to hire male and female anchor persons in the television. If the opposite pie graph represents the given data; what is the number of female candidates who applied for that test ?



7 📖 The opposite bar graph shows what Samir , Adel and Mohamed have saved during the first five months of the year. Complete :

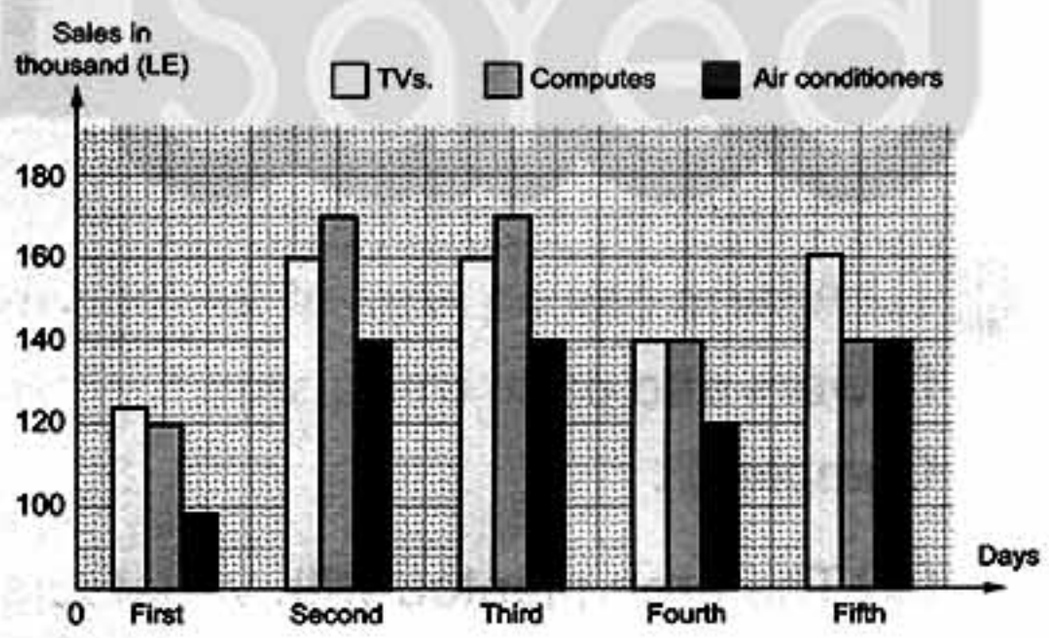


(a) The savings of Samir are equal to the savings of Adel in April and in

(b) The savings of Mohamed are equal to the savings of Adel in

(c) The savings of Samir are greater than the savings of Adel in , ... and

8 📖 The opposite figure shows the sales of TVs, computers, and air conditioners in thousands of pounds in a store during five successive days :



Complete :

(a) The day in which the sales of air conditioners are equal to the sales of computers is

(b) The day in which the sales of the TVs are equal to the sales of computers is

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(c) The days in which the sales of computers are greater than the sales of televisions are and

(d) The days in which the sales of TVs are greater than the sales of air conditioners are

9 Laila works in a bookstore. She used circle graph to show some data she collected. Solve these problems about the sports books circle graph :



100 Sports books sold last month

(a) Which types of sports books had the greatest sales ?

(b) For which sport were 9 books sold last month ?

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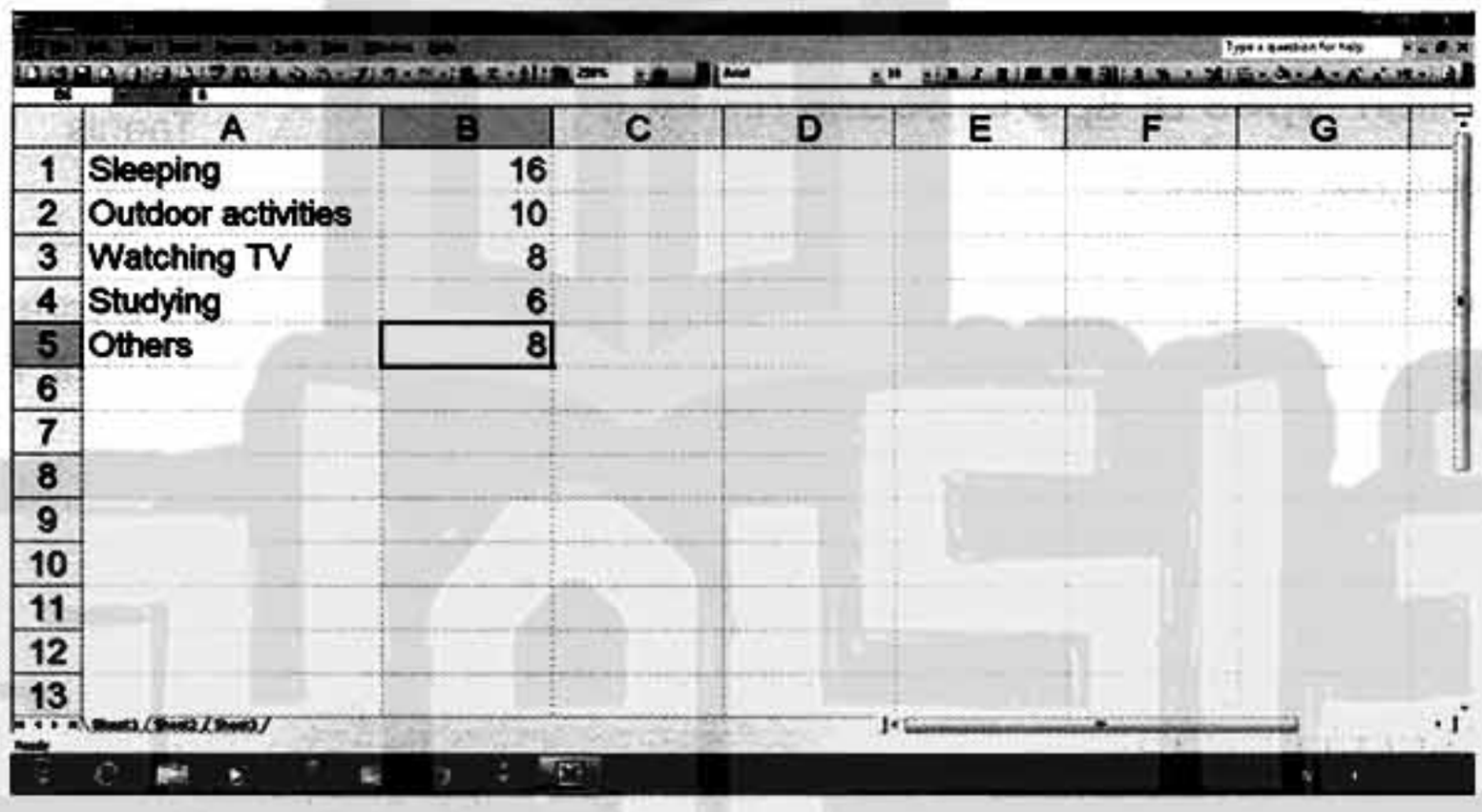
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Unit Five

Technology of unit five

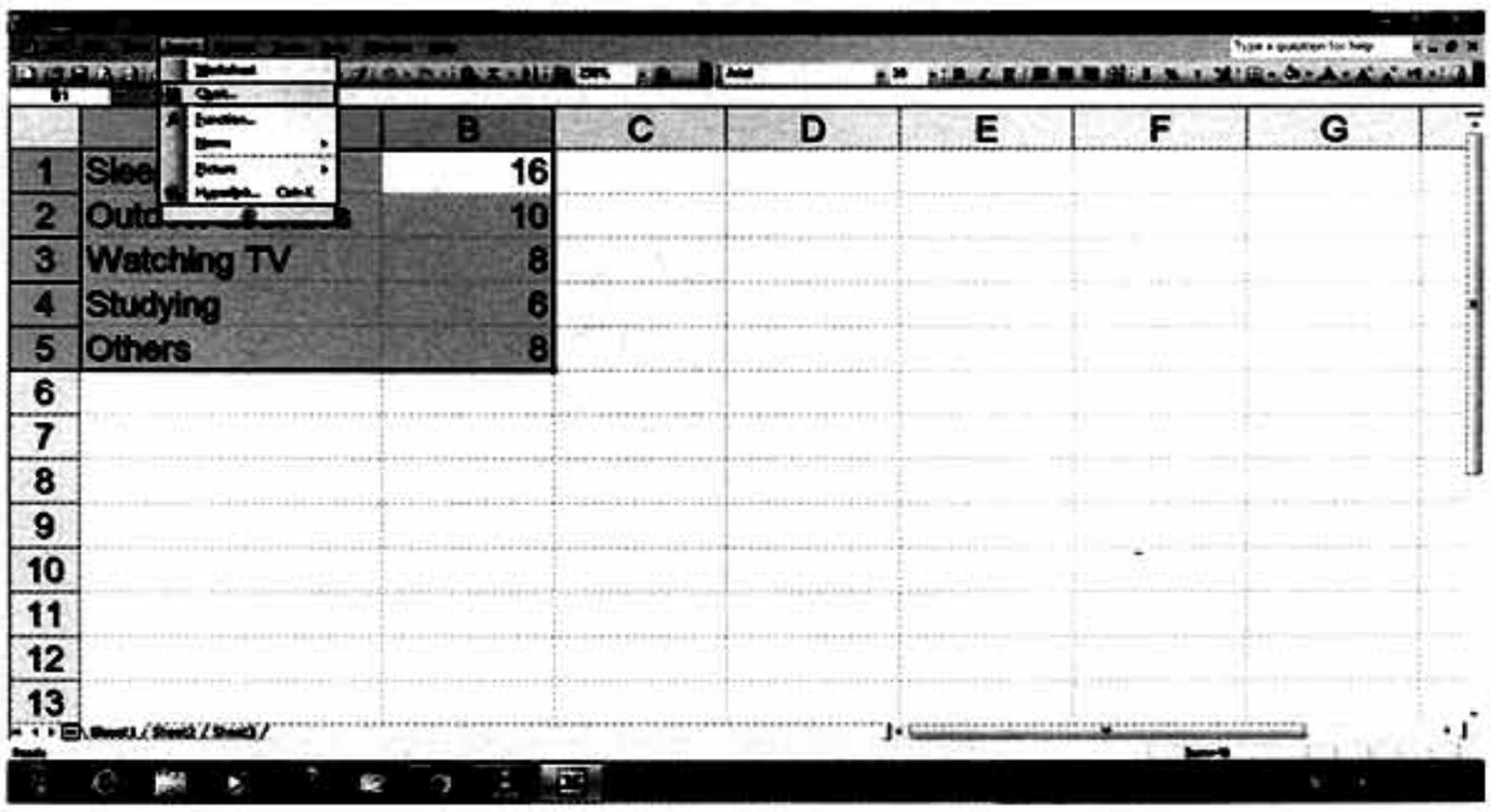
1. Keep track of how you spend your time during a weekend (Friday and Saturday). You may choose to divide your time into the following 5 categories : sleeping , outdoor activities, watching TV, studying and others. Your teacher will show you how to do these steps :

2. Record your data in a table using (Excel program).
 - Column A : Activities.
 - Column B : Number of hours. as in the following screen :



	A	B	C	D	E	F	G
1	Sleeping	16					
2	Outdoor activities	10					
3	Watching TV	8					
4	Studying	6					
5	Others	8					
6							
7							
8							
9							
10							
11							
12							
13							

3. Shade the data in column A and column B.
 Click the Insert menu choose chart
 as in the following screen:



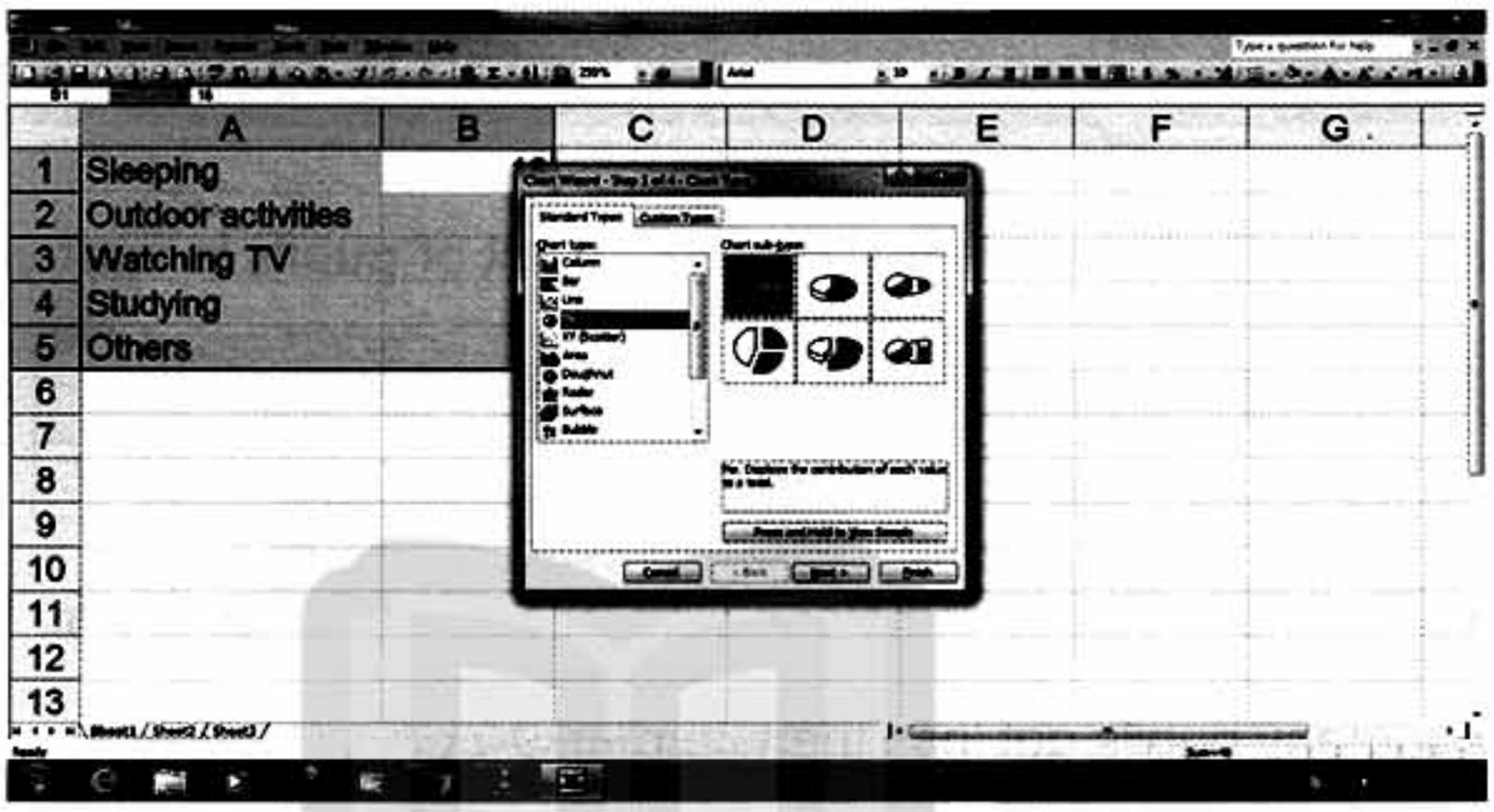
	A	B	C	D	E	F	G
1	Slee	16					
2	Outd	10					
3	Watching TV	8					
4	Studying	6					
5	Others	8					
6							
7							
8							
9							
10							
11							
12							
13							

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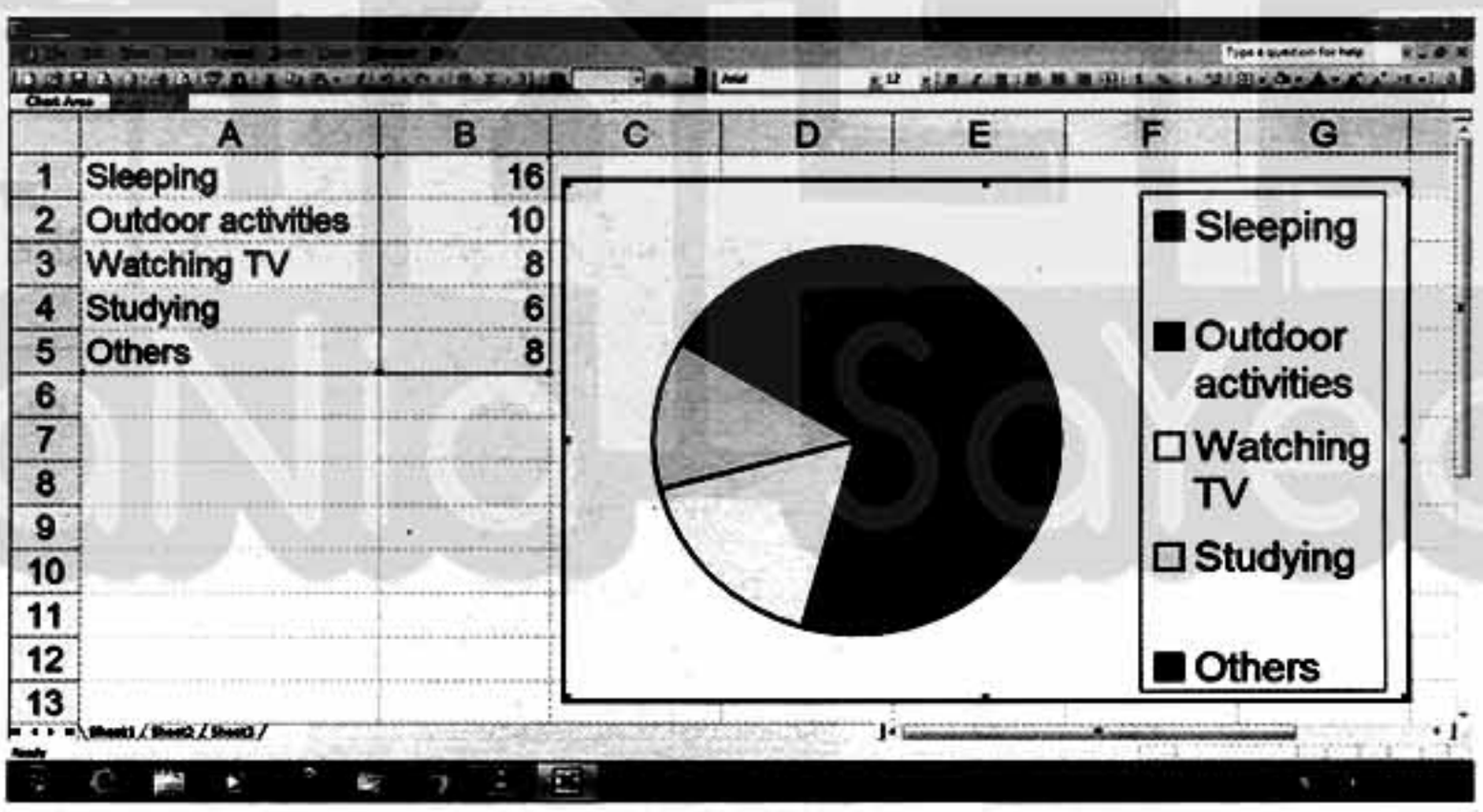
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4 Click chart , then choose pie as in the following screen :



5 Click Next > and Next > , finally click Finish ,

You will have the required pie graph as in the following screen :



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Unit Five

General exercise on unit five
from the school book

(1) The following table shows the marks of a set of pupils in mathematics :

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	𝍸	𝍸 𝍸	//	𝍸 ///	𝍸 //

(a) Rewrite the previous table showing frequency in numbers.

(b) How many pupils get less than 30 marks ?

(c) Draw the histogram and frequency polygon of this distribution.

(2) The following table shows the daily wages of workers in a company :

Sets	20 –	30 –	40 –	50 –	60 –	Total
Frequency	8	10	16	12	4	50

Draw the histogram and frequency polygon which represent these data.

(3) The following table shows the frequency distribution of the number of work hours of 50 workers :

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the histogram and frequency polygon which represent these data.

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Test on Unit Five



1 The following data represents the weights of 40 children :

12	30	27	15	27	21	16	33
14	22	15	21	13	23	26	24
22	28	34	15	14	16	21	27
26	21	15	30	10	31	16	23
21	15	25	28	19	22	28	30

Form the cumulative frequency table using the sets : 10 – , 15 – , 20 – , ...

Sets	Tally	Frequency
Total		

Sets						Total
Frequency						

2 The following table shows the daily wages of 50 workers of a company :

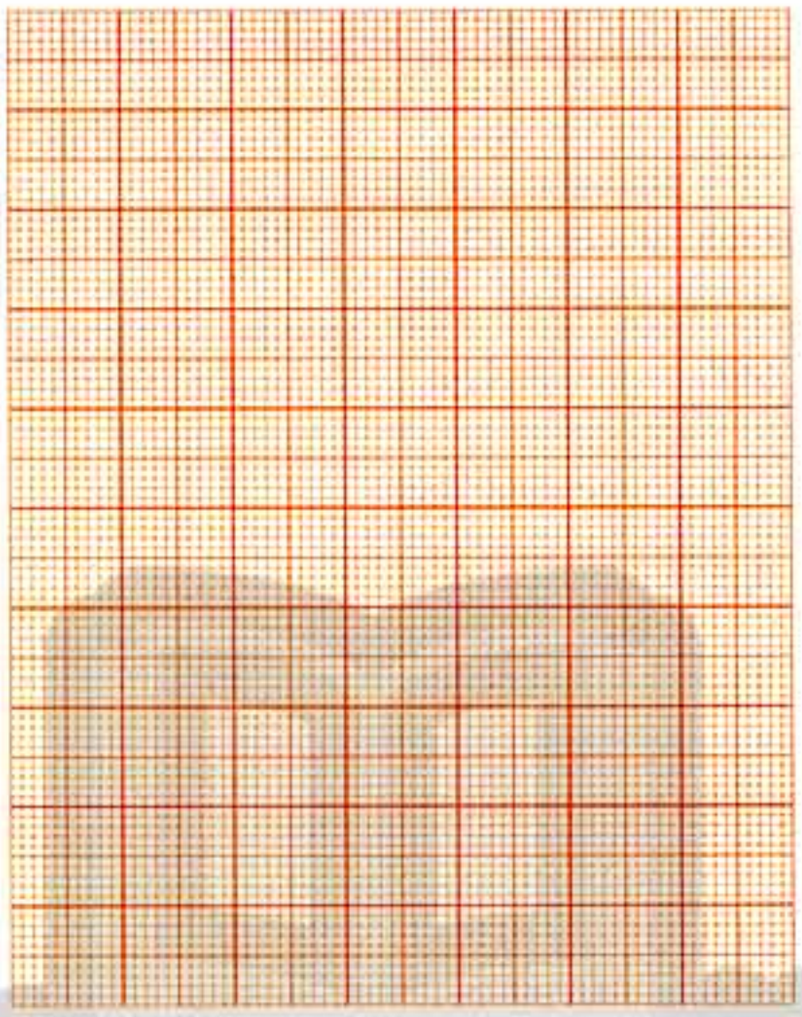
Sets	20 –	30 –	40 –	50 –	60 –	Total
Frequency	8	10	16	12	4	**50**

(1) What is the number of workers who got daily wages less than 40 ?

.....

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2 Draw the histogram for this distribution.



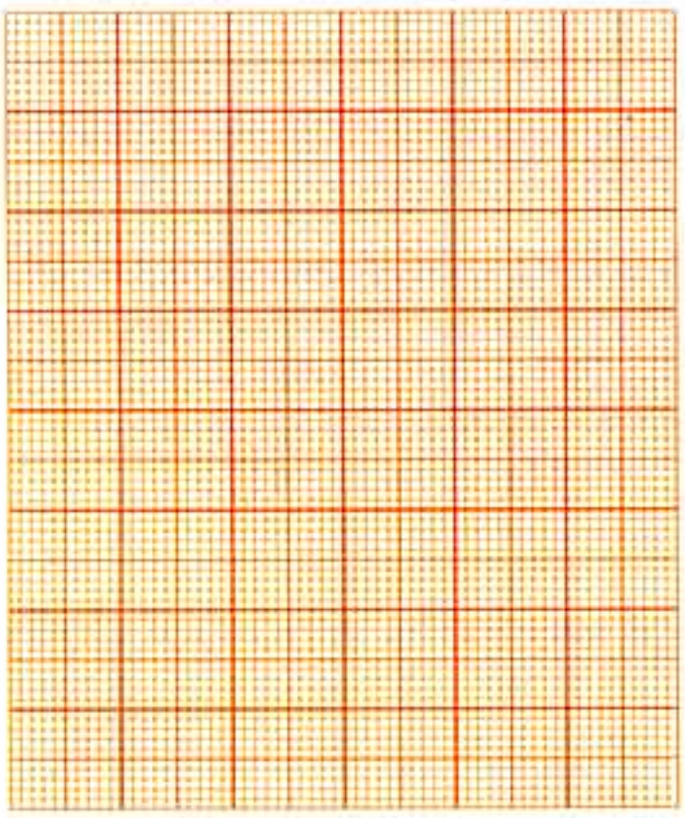
3 The following table shows the marks of 40 pupils in maths exam :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	6	K	14	12	40

1 Find the value of K

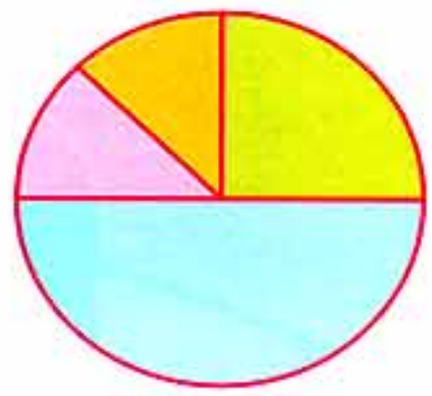
.....

2 Represent these data by the frequency polygon.



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4 An employee spends his monthly salary as follows 1000 pounds for food, 500 pounds for clothes, 250 pounds for the rent of the flat and 250 pounds for other spendings. Represent these data on the shown circular sectors.

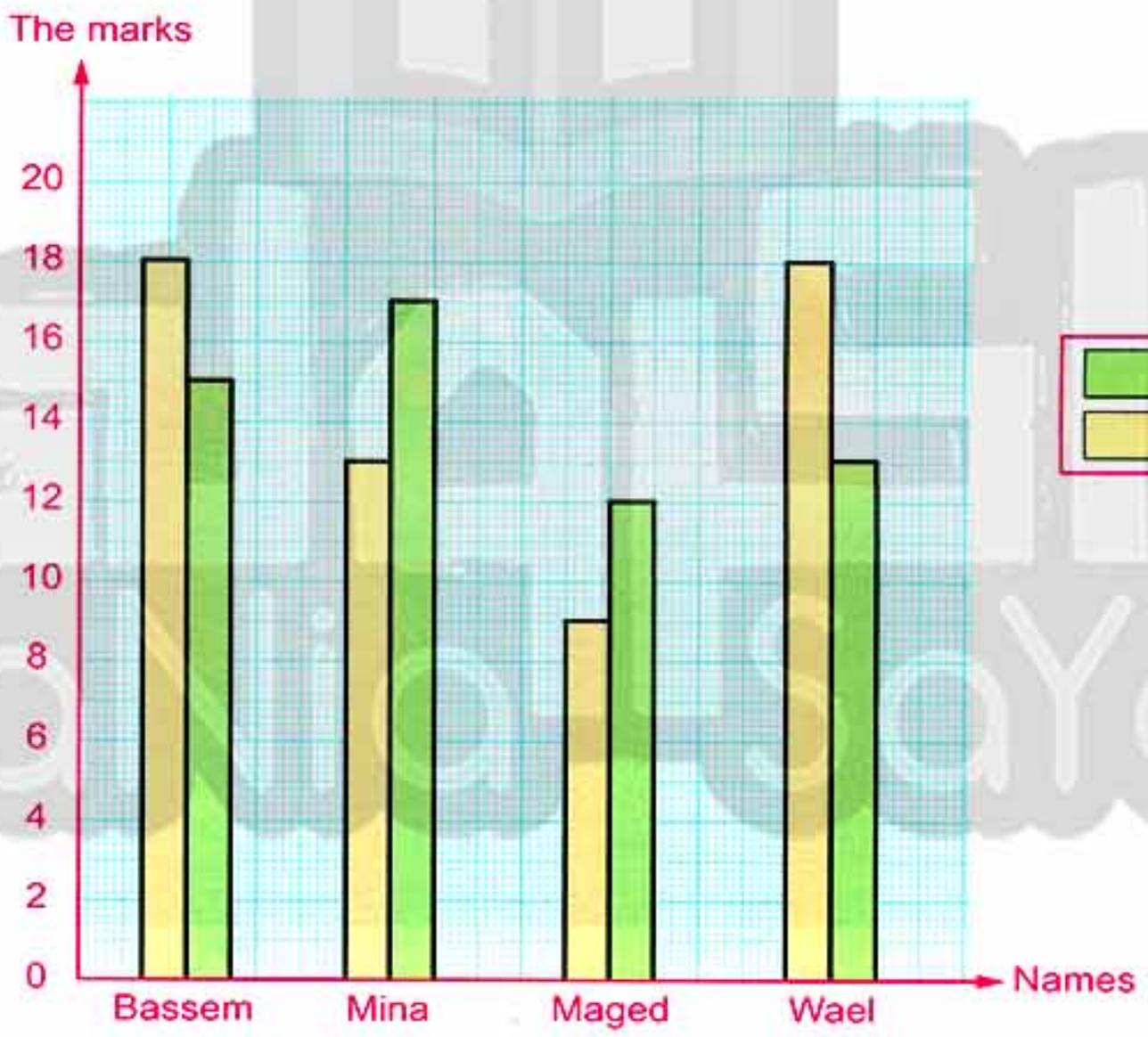


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5 **The following double bars shows the marks of four pupils in maths and science :**



1. Which pupil got the greatest mark in science ?

.....

2. Which pupil got the lowest mark in maths ?

.....

3. Which pupil got 13 marks in science ?

.....

4. Which pupils got the same mark in maths ?

.....

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TIMSS* Questions

First : Choose the correct answer :

1 Which of these fractions is larger than $\frac{1}{2}$?

(a) $\frac{3}{5}$ (b) $\frac{3}{6}$ (c) $\frac{3}{8}$ (d) $\frac{3}{10}$

2 If the pattern 3 , 6 , 9 , 12 was continued , which of these numbers would be one of the numbers in the pattern ?

(a) 26 (b) 27 (c) 28 (d) 29

3 In which number does the number 8 have the value of 800 ?

(a) 1 468 (b) 2 587 (c) 8 634 (d) 3 809

4 The least prime number is

(a) 0 (b) 1 (c) 2 (d) 3

5 6 m. + 7 cm. = ... cm.

(a) 13 (b) 67 (c) 607 (d) 76

6 The shape ⟶ represents

(a) line segment (b) ray (c) straight line (d) circle

7 The square has lines of symmetry.

(a) 4 (b) 3 (c) 2 (d) 1

* **TIMSS :** Trends of the International Mathematics and Science Studies.

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8 $9\frac{7}{100}$ = ...

(a) 9.7 (b) 9.07 (c) 9.007 (d) 7.9

9 24.84 ≃ (to the nearest unit)

(a) 25 (b) 24.8 (c) 24.9 (d) 25.8

10 $\frac{1}{3}$ day = ... hours.

(a) 6 (b) 7 (c) 8 (d) 9

11 $3\frac{1}{5} + 2\frac{1}{2}$ = ...

(a) $5\frac{2}{7}$ (b) $5\frac{7}{10}$ (c) $5\frac{7}{8}$ (d) $6\frac{7}{10}$

12 Which number is 100 more than 5 432 ?

(a) 6 432 (b) 5 532 (c) 5 442 (d) 5 433

13 The solid in which all the faces are rectangles is

(a) cuboid (b) cube (c) cylinder (d) sphere

14 2 units + 3 tens + 4 hundreds = ...

(a) 9 (b) 432 (c) 234 (d) 342

15 is a common multiple for all numbers.

(a) 1 (b) 10 (c) 0 (d) 2

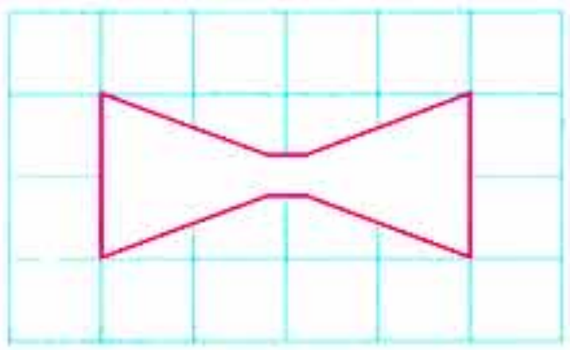
16 The number 201 is divisible by

(a) 2 (b) 3 (c) 5 (d) 10

17 Which fraction is not equal to the others ?

(a) $\frac{1}{2}$ (b) $\frac{4}{8}$ (c) $\frac{2}{4}$ (d) $\frac{2}{8}$

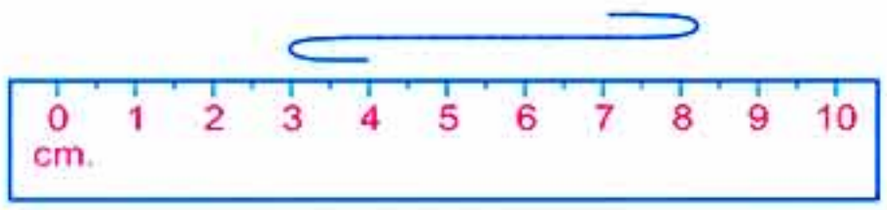
18 How many lines of symmetry does the opposite figure have ?



(a) 1 (b) 2

(c) 3 (d) 4

19 If the string in the opposite figure is pulled straight , which of these is closest to its length ?



(a) 5 cm. (b) 7 cm.

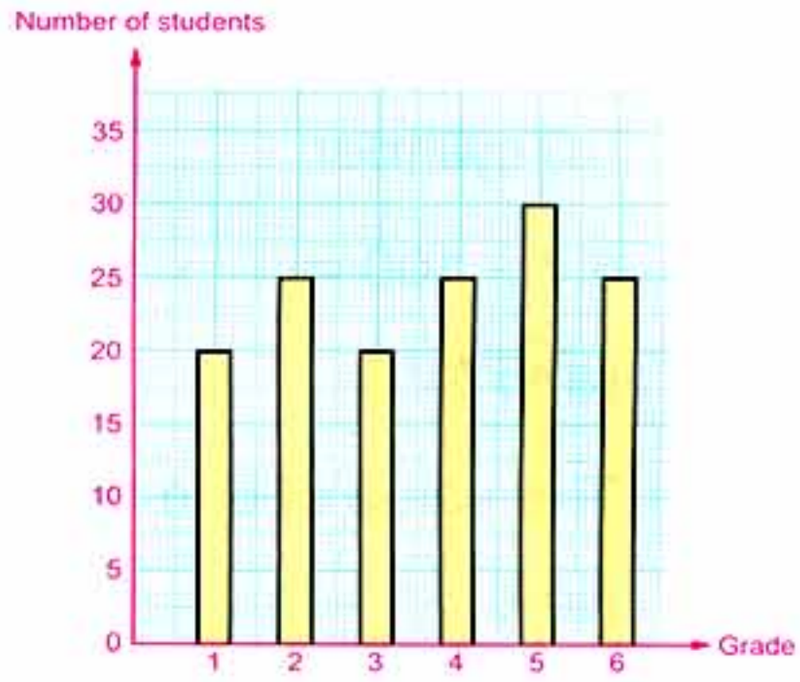
(c) 8 cm. (d) 9 cm.

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TIMSS Questions

20 The opposite graph shows the number of students at each grade in a school , there is room in each grade for 30 students.

How many more students could be in the school ?



(a) 20 (b) 25

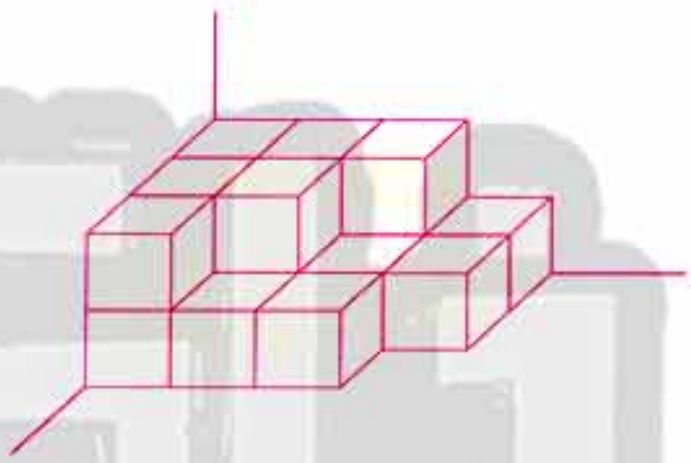
(c) 30 (d) 35

21 The angle whose measure is 91° , is called angle.

(a) acute (b) right (c) obtuse (d) straight

22 Farida stacks these boxes in the corner of the room , all the boxes are the same size.

How many boxes did she use ?



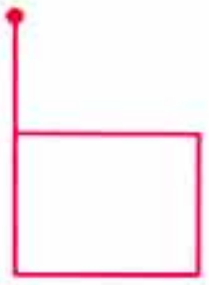
(a) 24 (b) 18

(c) 17 (d) 12

23 This figure will be turned to a different position.



Which of these could be the figure after it is turned ?

(a) 

(b) 

(c) 

(d) 

24 The probability of the certain event is

(a) 0 (b) $\frac{1}{2}$ (c) 0.7 (d) 1

25 The angle between the two hands of the clock is right when the time is o'clock.

(a) two (b) six (c) three (d) ten

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26 The solid which has two circular bases and no edges is

(a) cylinder (b) sphere (c) cube (d) prism

27 $5.7 \times 100 =$

(a) 57 (b) 5 700 (c) 570 (d) 0.57

28 The value of 6 in the number 36 541 is

(a) 6 (b) 60 (c) 600 (d) 6 000

29 All numbers are divisible by 2

(a) odd (b) even (c) prime (d) natural

30 The triangle whose side lengths are 7 cm., 3 cm. and 7 cm. is triangle.

(a) scalene (b) equilateral (c) isosceles (d) right

31 $70 \times 20 = 14 \times$

(a) 1 (b) 10 (c) 100 (d) 1 000

32 The H.C.F. of the two numbers 16 and 24 is

(a) 2 (b) 4 (c) 8 (d) 12

33 $(125 + 308) + 571 = (125 + 571) +$

(a) 125 (b) 308 (c) 571 (d) 38

34 $3\frac{1}{2}$ kg. = ... gm.

(a) 3.5 (b) 350 (c) 3 500 (d) 35 000

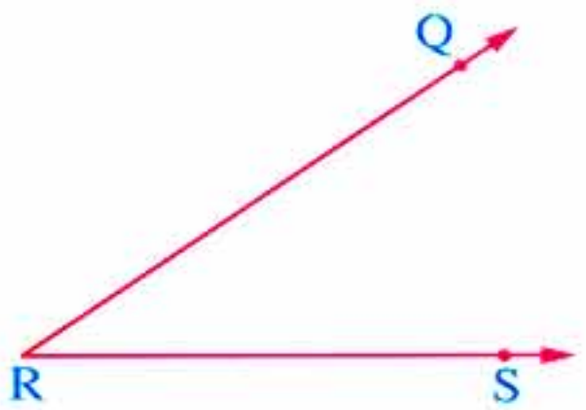
35 Each face of the cube looks like a

(a) square (b) rectangle (c) triangle (d) circle

36 The vertex of the opposite angle is

(a) Q (b) R

(c) S (d) T



37 The smallest 3-digit number is

(a) 999 (b) 111 (c) 100 (d) 102

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TIMSS Questions

38 Sixty five and eight tenths is written as

(a) 65.08 (b) 65.8 (c) 8.65 (d) 6.58

39 540 piastres = ... pounds.

(a) 54 (b) 5.4 (c) 5 400 (d) 0.54

40 + 0.8 = 1

(a) 2 (b) 0.2 (c) 1.2 (d) 20

Second : Answer the following questions :

1 Arrange the following fractions in a descending order :

$\frac{3}{5}$, $\frac{2}{3}$, $\frac{7}{15}$ and $\frac{1}{6}$

2 Mariam bought 25 metres of cloth , the price of one metre is P.T. 475
How much money did she pay ?

3 A box contains 3 red , 5 blue and 8 white balls , if one ball is drawn at random , calculate the probability of drawing :

(a) a white ball. (b) a green ball.

4 Draw the two hands :



It is five to one

5 In a football league , teams get :
3 points for a win , 1 point for a tie , 0 points for a loss.
Heroes team has 8 points , what is the smallest number of games Heroes team could have played ?

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Glossary



هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Glossary

A

across	عَبْر
activity	نشاط
addition	الجمع
additive	جمعى
adjacent	مجاور
affect	يؤثر
air conditioner	مكيف الهواء
altitude	ارتفاع
always	دائمًا
among	خلال
amount	مقدار
annually	سنويًا
approach	يقترب من
area	مساحة
arrangement	ترتيب
arrow	سهم
ascending	تصاعدى
associative	دمج
axis	محور

B

balance	متزن / إتزان
base	قاعدة
begin	يبدأ
bookstore	مكتبة

C

candidate	مرشح
card	بطاقة
cell	خلية
challenge	تحدى
check	يتأكد
circle	دائرة
circular	دائرى
circumference	محيط الدائرة
citizen	مواطن
clear	واضح
click	ينقر
closure	إغلاق
collecting	تجميع
column	عمود
commutative	إبدال
compare	يقارن
comparing	مقارنة
compass	فرجار
completion	إكمال
conduct	يدير
congruent	متطابق
consecutive	متتالى
consist of	يتكون من
constant	ثابت
continues	مستمر
coordinate	محور
copying	نسخ
corresponding	مناظر
cost	تكلفة
counting	العد
cover	يغطى / غطاء
critical	انتقادى
cumulative	مكمل
curved line	خط منحني
cut	يقطع
cylinder	أسطوانة

D

daily	يوميًا
data	معلومات
delivering	التوصيل

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موقع ذاكرولى التعليمى
كتاب المعاصر

express	يعبر عن
expression	تعبير
extra	إضافى
extract	يلخص

F

factor	عامل
factory	مصنع
favourite	مفضّل
female	أنثى
fence	سور
first	أولاً
flat	سطح
flip	يقلب
fold	يطوى
follow	يتبع
forming	تكوين
formula	قاعدة
frequency	التكرار

G

generalise	يعمِّم
geometric	هندسى
graph	رسم بيانى
greater	أكبر
greatest	الأكبر
grid	شبكة

H

happen	يحدث
height	ارتفاع
hexagon	شكل سداسى الأضلاع
hire	أجر
histogram	المدرج التكرارى
horizontal	أفقى
delivery service	خدمة التوصيل
denote	يُرمز بـ
descending	تنازلى
description	وصف
details	تفاصيل
determine	يحدد
diagonal	قُطر
diagonally	قُطرى
diagram	شكل
diameter	قطر الدائرة
difference	فرق
digit	رقم
dimension	بُعد
direction	اتجاه
discount	تخفيض
distance	مسافة
distribution	توزيع
distributive	توزيع
divisible	يقبل القسمة على
division	القسمة
donation	التبرع
double	ضِعف

E

employee	موظف
enrich	يُغْنِى
equal to	مساوٍ لـ
equation	معادلة
equilateral triangle	مثلث متساوى الأضلاع
essay	مقالى
estimation	تخمين
even number	عدد زوجى
exceed	يزيد عن
except	ما عدا
existence	وجود

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موقع ذاكرولى التعليمى
كتاب المعاصر

Glossary

I	
identical	منتظم
identity	محايد
illusion	خداع
image	صورة
include	يحتوى
increase	يزيد عن
infinite	غير منتهى
interchanging	يتبادل
interest	تشويق
interval	فترة
inventory	بيان مفصّل
isosceles trapezium	شبه منحرف متساوى الساقين
isosceles triangle	مثلث متساوى الساقين
item	وحدة
J	
jar	جرّة / مرطبان
K	
knowledge	معرفة
L	
lab	معمل
least	الأقل
left	شمال / الباقى
length	طول
less	أقل
librarian	أمين المكتبة
lie	يقع
listing	السرد
literary	أدبىّ
locate	يحدد موضعًا
long	طويل
longest	الأطول
look for	يبحث عن
M	
male	ذكر
maximum	الأقصى
mean	يعنى
measurment	قياس
mental	عقلى
midpoint	نقطة المنتصف
minimum	الأدنى
most	معظم
multiple-choice	الاختيار
multiplication	الضرب
multiplicative	ضربى
N	
natural	طبيعى
neutral	محايد
next	التالى
number	عدد
numerical	عددى
O	
obtain	يحتوى على
odd number	عدد فردى
operation	عملية
optical	بصرى
ordered pair	زوج مرتب
ordering	ترتيب
organizing	تنظيم
original	أصل
orphanage	دار الايتام
overtime	وقت إضافى
owner	مالك

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موقع ذاكرولى التعليمى
كتاب المعاصر

P	
pan	كفة الميزان
parallelogram	متوازى الأضلاع
pattern	نمط
pentagon	شكل خماسى الأضلاع
perimeter	محيط
perpendicular	عمودى على
pictorial	مجلة مصورة
pie graph	قطاع دائرى بيانى
place	مكان
plot	يعيّن موقع
polygon	مضلع
popular	مفضّل
possible	ممكن
prelude	تمهيد
previous	السابق
price	ثمن
prime number	عدد أولى
process	عملية
product	منتج / حاصل الضرب
program	برنامج
property	خاصية
Q	
quadrilateral	شكل رباعى
quarter	ربع
quotient	خارج القسمة
R	
radius	نصف قطر الدائرة
range	مدى
rectangle	مستطيل
refer to	يشير إلى
reflection	انعكاس
regular	منتظم
relation	علاقة
religious	دينى
remember	يتذكر
repeat	يعيد
represent	يعرض
required	مطلوب
rewrite	يعيد كتابة
rhombus	معَين
right	يمين / صحيح
rotation	دوران
row	صف
rule	قاعدة
S	
same	مثل
scale	ميزان
scalene triangle	مثلث مختلف الأضلاع
scientific	علمى
second	ثانيًا
sector	قطاع
semicircle	نصف دائرة
sentence	جملة
sequence	تسلسل
set	مجموعة
shaded	مظلل
sheet	صفحة
shift	يغَير / يبدّل
side	جانب / ضلع
simple	بسيط
simplify	يختصر
sketch	يرسم مخطط / مخطط
slide	ينزلق
smallest	الأصغر
so on	وهكذا

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موقع ذاكرولى التعليمى
كتاب المعاصر

Glossary

total	مجموع
towards	نحو
transform	يتحول
transformation	تحويل
translate	ينتقل / يترجم
translation	انتقال / ترجمة
transportation	الانتقال
trapezium	شبه منحرف
triangle	مثلث
turn	يدير
twice	ضعف
U	
unfold	ينشر / يفتح
unit	وحدة
unknown	غير معلوم
V	
value	قيمة
variable	متغير
verbal	لفظىّ
vertical	رأسى
W	
wage	أجر
weather forecast	هيئة الأرصاد الجوية
width	عرض
without	بدون
worker	عامل
solve	يحل
square	مربع
start	يبدأ
statistics	الإحصاء
stick	يلصق
store	محل تجارى
string	خيط
subset	مجموعة جزئية
subtraction	الطرح
successive	متتالى
summary	ملخص
surface	سطح
survey	استبيان
symbol	رمز
symbolic	رمزى
symmetrical	متماثل
symmetry	التماثل
T	
table	جدول
take away	يزيل / يقصى
task	مهمة / واجب
technique	تقنية / أسلوب
term	جانب
therefore	إذن
thinking	تفكير
third	ثالثًا
times	مضروبًا فى

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Sheet 1

On lesson 1 unit 1

Total mark 25

1 ***Underline the natural numbers from the following numbers :*** (5)

$4 , 7 , 3.3 , 0 , \frac{7}{5}$ and 1

2 ***Complete using "$\in$, $\notin$, $\subset$ or $\not\subset$" :*** (5)

(a) $\{1 , \frac{1}{2}\}$ $\mathbb{N}$

(b) 100 $\mathbb{N}$

(c) 23.4 $\mathbb{N}$

(d) E $\mathbb{N}$

(e) $\varnothing$ $\mathbb{N}$

3 ***Complete :*** (5)

(a) $\{0\} \cap E =$

(b) $\{2 , 3 , 4 , 5 , 6\} \cap O =$

(c) $\mathbb{N} - O =$

(d) $E \cap O =$

(e) $\mathbb{N} \cup$ the set of counting numbers = ...

4 ***Put (✓) for the true statement and (✗) for the incorrect one :*** (5)

(a) $2.3 \in \mathbb{N}$ ()

(b) $E \cup O = \varnothing$ ()

(c) $\mathbb{N} - E = O$ ()

(d) $P \cap E = \{2\}$ ()

(e) $\{0\} \subset E$ ()

5 ***Choose the correct answer :*** (5)

(a) $\mathbb{N} - C =$ ($\varnothing$ *or* $\{0\}$ *or* E *or* O)

(b) $\{1 , 2 , 3\} \cap E =$ (2 *or* $\{1\}$ *or* $\{2\}$ *or* $\{2 , 3\}$)

(c) One million $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(d) The smallest odd number is (0 *or* 1 *or* 2 *or* 3)

(e) $E \cap \mathbb{N} =$ ($\varnothing$ *or* 0 *or* $\mathbb{N}$ *or* E)

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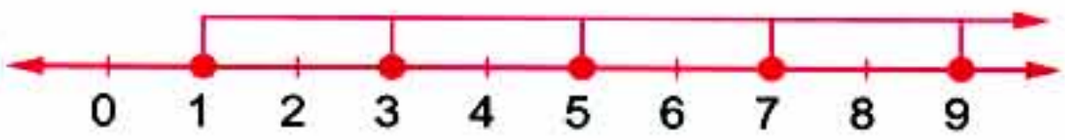
Sheet 2

From lesson 1 unit 1
to lesson 2 unit 1

Total mark 25

1 ***Write down the represented set on the following number lines :***

(a)


(b)


(c)


(d)


..... 4

2 ***Represent on the number line each of the following sets :***

..... 5

(a) $\{1 , 3 , 6\}$
(b) $\{2\}$
(c) $\{5 , 6 , 7 , \dots\}$
(d) $\{1 , 2 , 4\} \cup \{1 , 3 , 5\}$

3 ***List each of the following sets and represent them on the number line :***

..... 6

(a) The set of natural numbers less than 5
(b) The set of natural numbers greater than or equal 4
(c) The set of natural numbers between 2 and 7
(d) The set of even numbers less than $8\frac{1}{2}$

4 ***Complete :***

..... 5

(a) The smallest natural number is
(b) The smallest counting number is
(c) The set of natural numbers that are less than 7 is
(d) $C \cup \{0\}$ = ...
(e) $E \cap O$ = ...

5 ***Complete by using the suitable symbol "$\in$, $\notin$, $\subset$ or $\not\subset$" :***

..... 5

(a) $\{3\}$ $\mathbb{N}$
(b) $\{2 , 5\} \cap \{2 , 4\}$ O
(c) O C
(d) 8.8 $\mathbb{N}$
(e) 0 C

7

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Sheet 3

From lesson 1 unit 1
to lesson 3 unit 1

Total mark 25

1 ***Use the number line to find each of the following :*** 5

(a) 4 + 3
(b) 7 – 5
(c) 3 + 3
(d) 6 – 6
(e) 5 + 4 – 3

2 ***Complete the following :*** 6

(a) The additive neutral element in $\mathbb{N}$ is
(b) 4 + (2 + 5) = (4 + 2) + 5 (..... property)
(c) a + b = b + a (..... property)
(d) If a $\in \mathbb{N}$, b $\in \mathbb{N}$, then a + b $\mathbb{N}$
(e) 14 + ... = ... + 14 = 14

3 ***Put (✓) or (✗) :*** 5

(a) The subtraction operation is an associative in $\mathbb{N}$ ()
(b) 10 – 10 < 1 + 1 ()
(c) 12.12 $\in \mathbb{N}$ ()
(d) The smallest natural number is 1 ()
(e) The natural number between $2\frac{1}{2}$ and 3.9 is 3 ()

4 ***Use the properties of addition to find the value of :*** 6

(a) 46 + 17 + 64
(b) 71 + 82 + 29 + 18
(c) 174 + 143 + 126 + 157

5 ***The following number line shows 3 numbers " X , Y and Z" :*** 3



Complete using "> or <" :

(a) X Z
(b) X Y
(c) Z Y

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Sheet 4

From lesson 1 unit 1
to lesson 4 unit 1

Total mark 25

1 ***Use the properties of multiplication to find :***

(a) $25 \times 12 \times 4$
(b) $135 \times 74 + 135 \times 26$
(c) $4 \times 8 \times 25 \times 125$
(d) 53×99
(e) 29×101

5

2 ***Write "possible or impossible" in $\mathbb{N}$:***

(a) $35 \div 7$ (.....)
(b) $\frac{0}{5}$ (.....)
(c) $10 \div 0$ (.....)
(d) $\frac{21-21}{21+21}$ (.....)
(e) $\frac{3}{3-3}$ (.....)

5

3 ***Complete :***

(a) The multiplicative identity element is
(b) $70 \times 13 -$ $\times 13 = 50 \times 13$
(c) $(a \times b) \times c = a \times (b \times c)$ is called property.
(d) $(12 + 8) \div 2 =$
(e) The set of natural numbers less than 5 is

5

4 ***Choòse the correct answer :***

(a) The product of any two natural numbers $\mathbb{N}$
($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)
(b) $8 \times 54 =$
($8 \times 5 + 8 \times 4$ *or* $8 \times 5 + 8 \times 40$ *or* $8 \times 50 + 8 \times 4$)
(c) $3 \times (2 +$$) = 24$
(2 *or* 3 *or* 6 *or* 8)
(d) An odd number × an even number = ... number
(odd *or* even *or* prime)
(e) The additive identity element in $\mathbb{N}$ is
(0 *or* 1 *or* 2 *or* 3)

5

5 ***If $x = 3$, $y = 2$ and $z = 5$, find the value of :***

(a) $x \times y + y \times z$
(b) $(x - y) \times z$
(c) $(z + x) \times y$
(d) $2 \times x + 4 \times y - z$

5

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Sheet 5

From lesson 1 unit 1
to lesson 5 unit 1

Total mark 25

1 ***Complete each of the following patterns :*** 5

(a) 2 , 22 , 222 , ... , ... , ...

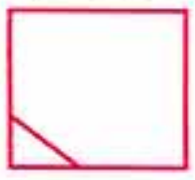
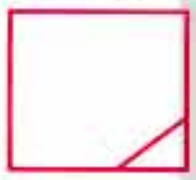
(b) 2 , 4 , 8 , ... , ... , ...

(c) 1 , 3 , 6 , 10 , ... , ... , ...

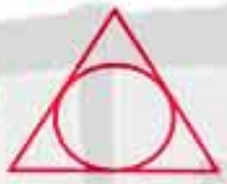
(d) 4 , 9 , 14 , 19 , ... , ... , ...

(e) 1 , 4 , 9 , ... , ... , ...

2 ***Complete each of the following patterns :*** 5

(a)  ,  ,  , ...

(b)  ,  ,  ,  , ... , ...

(c)  ,  ,  , ...

(d)  ,  ,  , ...

(e)  ,  ,  , ...

3 (a) Consider the sequence : 1 , 3 , 6 , 10 , 15 , ...
What is the tenth term ? 4

(b) Find the seventh term in the sequence : 1 , 3 , 7 , 15 , 31 , ...

4 ***Use the properties in ℕ to find each of the following :*** 6

(a) 43 + 55 + 57 + 45
(b) 4 × 16 × 25
(c) 18 × 69 + 18 × 31
(d) 65 × 102

5 ***Put (✓) for the correct statement and (✗) for the incorrect one :*** 5

(a) 12.1 ∈ ℕ ()
(b) {1 , 2 , 3 , 4} ⊂ C ()
(c) 14 + 2 = 2 + 14 ()
(d) ∅ ⊂ ℕ ()
(e) 7 ÷ 0 = 0 ()

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Sheet 6

From lesson 1 unit 1
to lesson 1 unit 2

Total mark 25

1 ***Complete using a suitable symbolic expression :*** 4

(a) Add 3 to the number A , the symbolic expression is

(b) subtract 2 from the number B , the symbolic expression is

(c) Multiply 7 by the number C , the symbolic expression is

(d) Divide the number M by 5 , the symbolic expression is

2 ***Translate into symbolic expression :*** 5

(a) Six more than a number x

(b) Three times of a number y

(c) A number m decreased by 4

(d) Quotient of a number n by 2

(e) 8 is added to the double of a number d

3 ***Choose the correct answer :*** 5

(a) Five times the number K is
(K + 5 *or* K – 5 *or* K ÷ 5 *or* 5 K)

(b) 0.12 $\mathbb{N}$
($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(c) What is the missing number ? 1 , 4 , 16 , 64 , ... , 1024 , 4096
(96 *or* 192 *or* 256 *or* 342)

(d) 72 + 84 = 84 + ...
(70 *or* 72 *or* 74 *or* 100)

(e) Nader is x years old now , how old will he be after 3 years ?
(3 x *or* 3 ÷ x *or* x – 3 *or* x + 3)

4 ***Write each symbolic expression in words :*** 6

(a) m + 3 (b) 6 n (c) $7 - \ell$

(d) $\frac{k}{9}$ (e) 2 a + 1 (f) 3 h – 4

5 (a) ***Use the properties to find the result of :*** 5

(1) 25 × 31 × 4 (2) 28 + 17 + 72 + 83

(b) ***List each of the following sets and represent them on the number line :***

(1) A is the set of natural numbers which are less than or equal 6

(2) B is the set of natural numbers which lying between 2 and 9

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Sheet 7

From lesson 1 unit 1
to lesson 2 unit 2

Total mark 25

1 ***Write down a mathematical relation x and y for each of the following :*** 5

(a) If the number y is 7 more than the number x

(b) If the number y is two times the number x

(c) If the number y is 3 less than the number x

(d) If the number x is the quotient of the number y by 5

(e) If the number x is twice the difference between y and 4

2 If the price of a shirt is L.E. 75 , the price of x shirts is y , then write a mathematical relation between x and y 2

3 If $y = 2x + 1$ is a mathematical relation between x and y , then complete the table : 5

x	3	1	0		
y				5	11

4 ***Complete :*** 5

(a) The multiplicative identity element in $\mathbb{N}$ is

(b) If three times of the number m is added to 7 , then the expression that expresses this is

(c) $35 \times 36 + 35 \times 64 = 35 \times$ = ...

(d) 3 , 3 , 6 , 9 , 15 , ... , ... (in the same pattern)

(e) Ahmed and Mona together have 20 books , if Ahmed has x books , then Mona has books.

5 (a) ***Represent each set of the following on the number line :*** 8

(1) $X = \{0 , 2 , 4 , 6\}$ (2) $Y = \{1 , 3 , 5 , 7 , \cdots\}$

(b) ***If $x = 2$, $y = 3$ and $z = 5$, find the value of :***

(1) $\frac{x + y}{z}$ (2) $3 \times z + x - y$

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Sheet 8

From lesson 1 unit 1
to lesson 3 unit 2

Total mark 25

1 ***Solve each of the equations :*** 6

(a) $x + 3 = 7$
(b) $f - 6 = 6$
(c) $3a = 21$
(d) $k + 4 = 2$
(e) $5x + 3 = 13$
(f) $25 - m = 19$

2 ***Translate each verbal statement into an equation :*** 5

(a) The sum of the number x and 7 is 12
(b) The difference of the number t and 9 is one where t is greater than 9
(c) Three times of a number k is 12
(d) If 5 is subtracted from a number n , then the result is six
(e) When the number N is divided by 5 , then the result is 4

3 (a) Find the number which if added to 5 , the sum is 8
(b) The product of a number m and 7 is 56 , find the number m 4

4 ***Choose the correct answer :*** 5

(a) $y \times 12 = 96$, then y = ... (10 **or** 9 **or** 8 **or** 7)
(b) The least natural number is (10 **or** 1 **or** 0 **or** 2)
(c) $32 \times 53 + 32 \times$ $= 32 \times 100$ (53 **or** 47 **or** 37 **or** 23)
(d) The side length of a square is t , its perimeter = ...
(t + 4 **or** 4 t **or** 2 t **or** t – 4)
(e) If $x = 3$ and $y = 5$, then $4x - 2y =$
(2 **or** 5 **or** 22 **or** 14)

5 (a) Solve the equation : 5

$2x + 7 = 17$, $x \in \mathbb{N}$

(b) ***Use the properties to find the value of :***

(1) 672 + 299 + 328 + 701
(2) $25 \times 917 \times 4$

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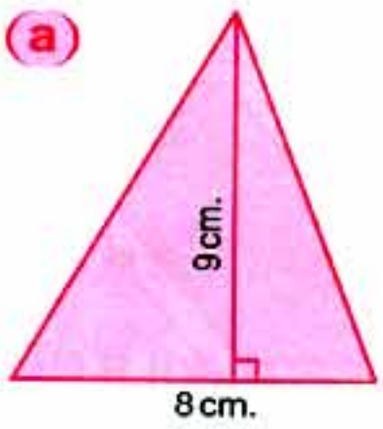
Sheet 1

On lesson 1 unit 3

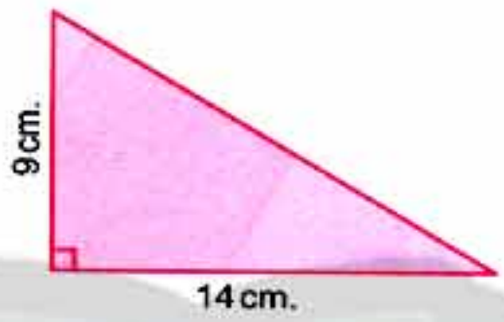
Total mark 25

1 ***Find the area of each of the following triangles :***

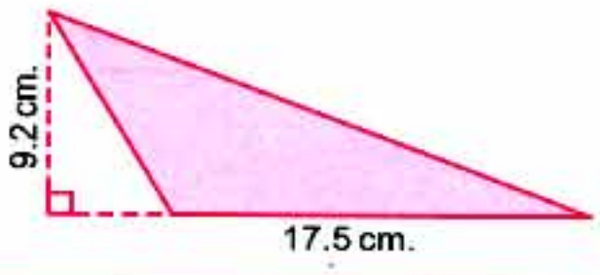
(a)



(b)



(c)

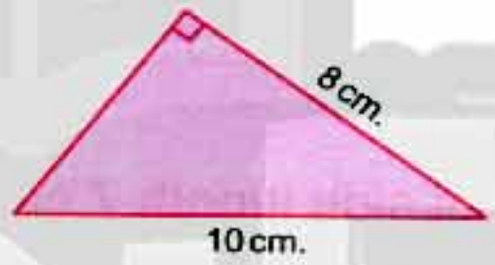


..... 6

2 (a) ***In the figure below :*** What is the area of this quadrilateral ?



(b) ***In the figure below :*** If the area of the shaded triangle is 24 cm^2. Calculate its perimeter.



..... 4

3 (a) Calculate the area of an equilateral triangle if its perimeter is 30 cm. and its height is 8.66 cm.

..... 6

(b) ***Which is larger in area ?*** A piece of land in the shape of a triangle with a base of 12 m. and a height of 9 m. or a garden in the shape of a square with side length 8 m. ?

4 ***In the opposite figure :***

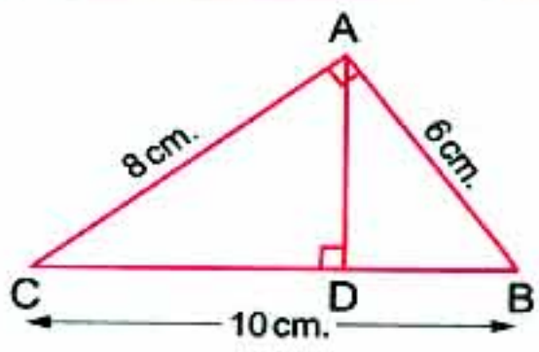
ABC is a right-angled triangle at A ,

AB = 6 cm. , AC = 8 cm. , BC = 10 cm.

$\overline{AD} \perp \overline{BC}$, find :

(1) Area of Δ ABC

(2) Length of $\overline{AD}$



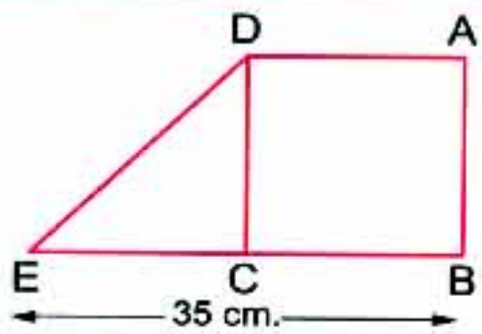
..... 4

5 ***In the opposite figure :***

ABCD is a square , its perimeter is 60 cm.

, $E \in \overrightarrow{BC}$, BE = 35 cm.

Find the area of the figure ABED



..... 5

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Sheet 2

From lesson 1 unit 3
to lesson 2 unit 3

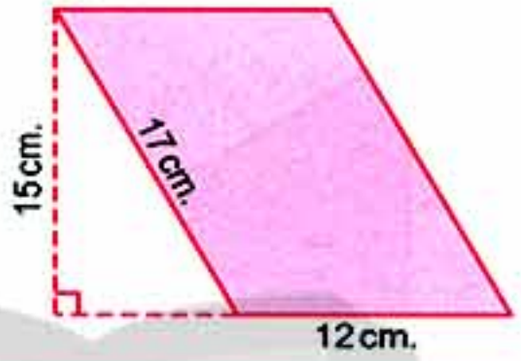
Total mark 25

1 ***Find the area of each of the following parallelograms :*** 6

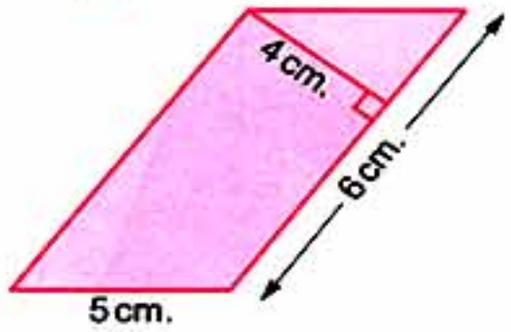
(a)



(b)



(c)



2 (a) Find the height of parallelogram with area 28 cm^2 and base 4 cm. 4

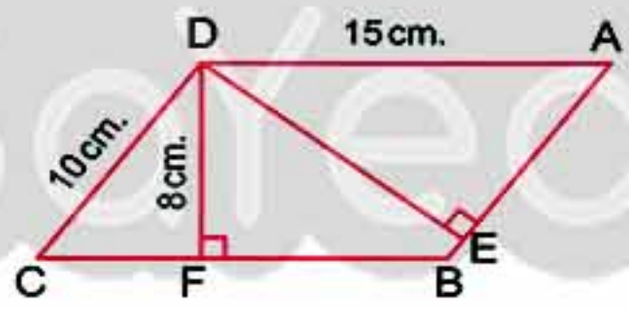
(b) ABCD is a parallelogram of area 180 cm^2 , AB = 60 cm. , CD = 45 cm.
Find its smallest height.

3 ***Which is greater ?*** 3

The area of the square of side length 7 cm. or the area of the parallelogram of base 9 cm. and height 5 cm.

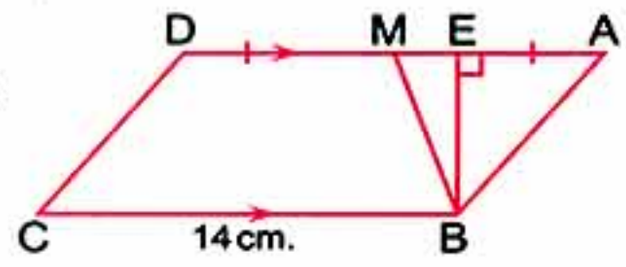
4 (a) Find the area of the triangle whose base length is 10 cm. and the corresponding height is 9 cm. 6

(b) ***In the opposite figure :***
ABCD is a parallelogram in which
AD = 15 cm. , CD = 10 cm. , DF = 8 cm.
and $\overline{DE} \perp \overline{AB}$, calculate the length of $\overline{DE}$



5 ***In the opposite figure :*** 6

ABCD is a parallelogram in which BC = 14 cm. ,
BE = 6 cm. , M is the midpoint of $\overline{AD}$



Complete :

(1) AD = ... cm.
(2) AM = ... cm.
(3) The area of ▱ ABCD = ... cm^2
(4) The area of Δ ABM = ... cm^2
(5) The area of figure MBCD = ... cm^2

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Sheet 3

From lesson 1 unit 3
to lesson 3 unit 3

Total mark 25

1 ***Calculate the area of each of the following squares :*** (8)

(a) If the side length is 6 cm.

(b) If the side length is 4.5 cm.

(c) If the diagonal length is 8 cm.

(d) If the diagonal length is 10 cm.

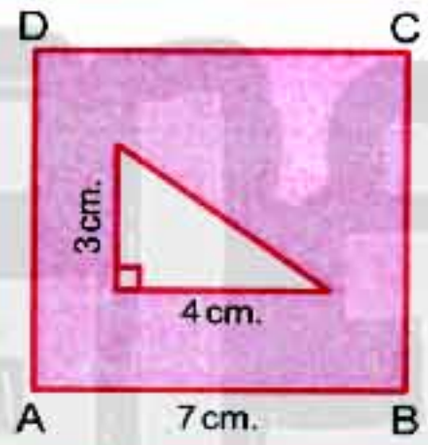
2 (a) The area of a square is 200 cm^2. Find the length of its diagonal. (4)

(b) Find the area of the square whose perimeter is 20 cm.

3 ***In the opposite figure :*** (4)

ABCD is a square.

Find the area of the shaded part.

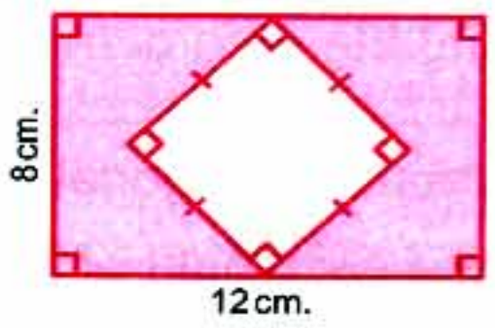


4 (a) Find the height of the parallelogram with an area 48 cm^2 and its base is 8 cm. long. (6)

(b) The length of the base of a triangle is 6 cm. and its height is 4 cm.

Find the area of this triangle.

5 Find the area of the shaded part in the opposite figure. (3)



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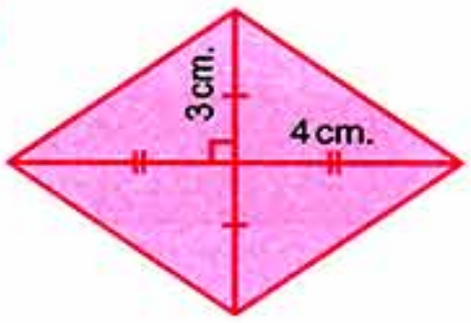
Sheet 4

From lesson 1 unit 3
to lesson 4 unit 3

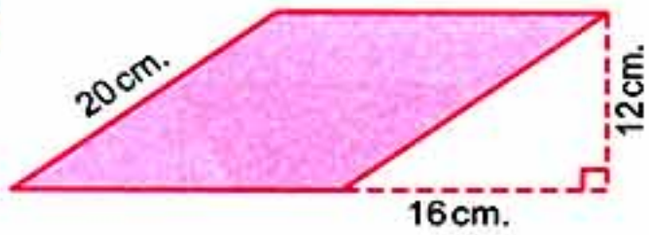
Total mark 25

1 ***Find the area of each of the following rhombuses :*** (6)

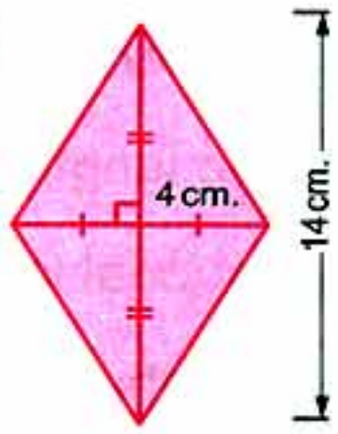
(a)



(b)



(c)



2 (a) The length of the diagonals of a rhombus are 12 cm. and 9 cm. Calculate its area. (6)

(b) ***Which is greater in area ?*** A square of diagonal length 10 cm. or a rhombus of diagonal lengths 12 cm. and 8 cm.

3 The side length of a rhombus is 10 cm. , its height is 9.6 cm. and the length of one of its diagonals is 12 cm. Calculate the length of the other diagonal. (3)

4 (a) ***In the opposite figure :*** (6)

ABCD is a parallelogram

where AD = 12 cm. and $\overline{ED} \perp \overline{BC}$

Find the area of the parallelogram.



(b) The triangle ABC is right-angled triangle at B , AB = 6 cm. , BC = 8 cm.
Find the area of triangle.

5 A rhombus of diagonal lengths are 8 cm. and 6 cm. , and a parallelogram in which the length of its base is 10 cm. and corresponding height is 5 cm. Calculate the difference between their areas. (4)

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Sheet 5

From lesson 1 unit 3
to lesson 5 unit 3

Total mark 25

1 ***Find the circumference of each of the following circles if :*** 5

(a) Its radius length = 5 cm. (Consider $\pi = 3.14$)

(b) Its diameter length = 28 cm. (Consider $\pi = \frac{22}{7}$)

(c) r = 7 cm. (Consider $\pi = \frac{22}{7}$)

(d) d = 12 m. (Consider $\pi = 3.14$)

(e) The length of the longest chord = 21 cm. (Consider $\pi = \frac{22}{7}$)

2 ***Which is longer ?*** 3

The circumference of a circle of radius length 3.2 cm. or the perimeter of a square of side length 3.5 cm. (Consider $\pi = 3.14$)

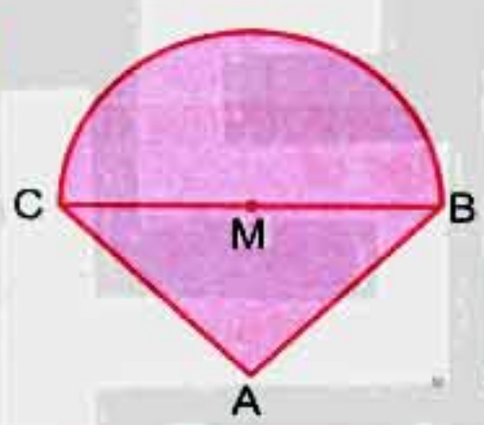
3 ***Calculate the perimeter of each figure (Consider $\pi = 3.14$) :*** 6

(a)



AB = 6 cm.

(b)



BC = 100 cm. ,
AB = AC = 70 cm.

4 (a) A circle of circumference 66 cm.
Find the length of its diameter. (Consider $\pi = \frac{22}{7}$) 6

(b) ***In the opposite figure :***
Calculate the perimeter of the figure. ($\pi = 3.14$)



5 (a) ***Which is greater in area ?*** 5

A rhombus in which its diagonals are 8 cm. and 6 cm. or a parallelogram in which its base is 10 cm. and the corresponding height is 5 cm.

(b) ***In the opposite figure :***
The triangle ABC is a right angled-triangle at A , where AC = 8 cm. , AB = 6 cm. and BC = 10 cm.
Find the area of the triangle.

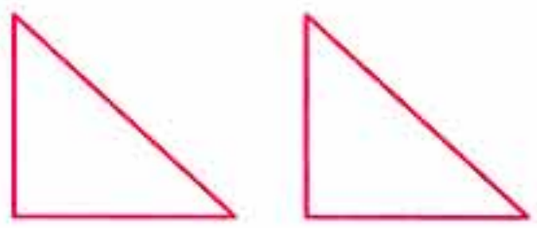
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Sheet 6

From lesson 1 unit 3
to lesson 1 unit 4

Total mark
25

1 ***Tell whether each transformation is the result of a reflection , a translation or a rotation :*** (3)

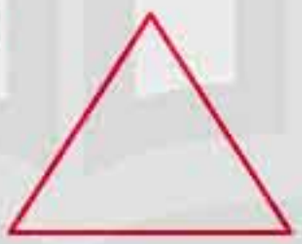
(a) 

(b) 

(c) b d

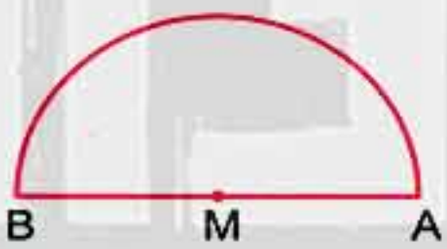
2 ***In each of the following figures , if the figure is symmetrical , draw all the axes of symmetry to it :*** (6)

(a) 

(b) 

(c) 

3 Calculate the perimeter of the opposite figure where AM = 35 cm. $\left(\text{Consider } \pi = \frac{22}{7}\right)$ (5)

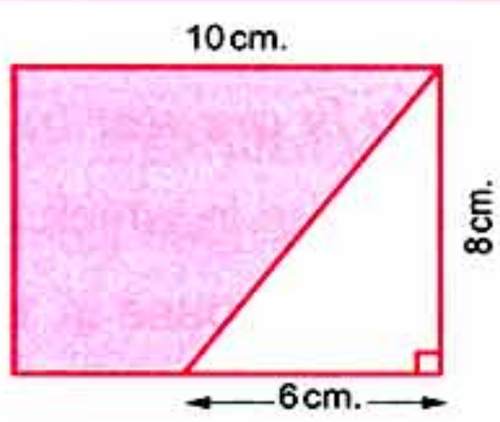


4 (a) Find the area of square of diagonal length 6 cm. (6)

(b) Find the height of the parallelogram whose area is 72 cm^2 and its base length is 9 cm.

5 ***In the opposite figure :*** (5)

Find the area of the shaded part.



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Sheet 7

From lesson 1 unit 3
to lesson 2 unit 4

Total mark 25

1 ***Choose the correct answer :***

(a) The number of axes of symmetry of the square

(0 **or** 1 **or** 2 **or** 4)

..... 4

(b) The area of parallelogram = ...

(b + h **or** b – h **or** b × h **or** $\frac{b}{h}$)

(c) The opposite geometric transformation is 

(rotation **or** translation **or** reflection)

(d) The area of the rhombus whose diagonals are of lengths 10 cm.

and 16 cm. = ... cm^2 (160 **or** 40 **or** 80 **or** 60)

2 (a) ***Which is greater in area ?*** The triangle whose base length is 12 cm. and height = 8 cm. or the parallelogram in which the length of the base = 10 cm. and its height = 5 cm.

..... 6

(b) Find the circumference of a circle whose diameter length 14 cm.

(Consider $\pi = \frac{22}{7}$)

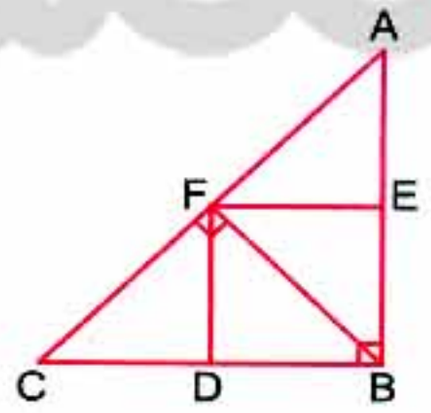
3 ***In the opposite figure , complete :***

..... 6

(1) Δ AEF is the image of Δ BEF by reflection in

(2) Δ ABF is the image of Δ CBF by reflection in

(3) Δ EBF is the image of Δ by reflection in $\overleftrightarrow{BF}$



4 In the cartesian coordinate plane draw Δ ABC in which A (3 , 2) , B (3 , 5) and C (0 , 0) , then draw its image by reflection in $\overleftrightarrow{AB}$

..... 5

5 ***Which is greater in area ?*** A square of diagonal length 10 cm. or a triangle which its base length 8 cm. and its corresponding height 12 cm.

..... 4

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Sheet 8

From lesson 1 unit 3
to lesson 1 unit 5

Total mark 25

1 ***Choose the correct answer :*** (5)

(a) The circumference of a circle = ...

($2\pi r$ **or** πr **or** $4\pi r$ **or** $2\pi d$)

(b) The circumference of a circle with diameter length 42 cm.

is cm. $\left(\text{Consider } \pi = \frac{22}{7}\right)$ (48 **or** 96 **or** 168 **or** 132)

(c) The area of a rhombus equals 24 cm^2 and the length of one of its diagonals is 8 cm. , then the length of the other diagonal = ... cm. (3 **or** 6 **or** 8 **or** 12)

(d) The length of a rectangle is 5 cm. and its width is 2.5 cm. , then the length of the diagonal of the square having the same area = ... cm. (2.5 **or** 5 **or** 10 **or** 25)

(e) The number of axes of symmetry of the rectangle = ...

(0 **or** 10 **or** 2 **or** 4)

2 ***The following data represents the maximum temperature in 16 Arab countries in one day :*** (5)

10	16	22	13	22	11	23	19
17	25	12	28	24	29	22	27

Make the cumulative frequency table by using the sets 10– , 15– , 20– and 25–

3 The area of a rectangle equals the area of a square which its diagonal is 12 cm. , find the peirmeter of the rectangle if its width is 8 cm. (5)

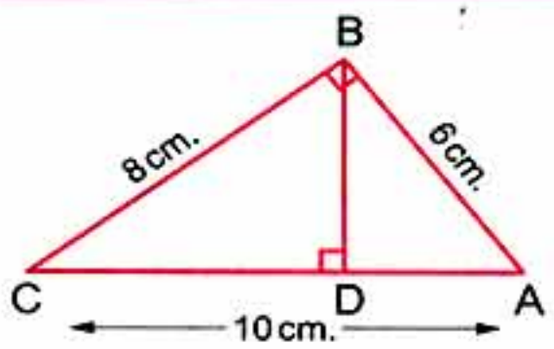
4 On the coordinate plan draw Δ ABC in which A (2 , 5) , B (5 , 5) and C (3 , 7) , then draw its image by reflection in $\overleftrightarrow{AB}$ (5)

5 ***In the opposite figure :*** (5)

ABC is a right-angled triangle at B

, $\overline{BD} \perp \overline{AC}$, AB = 6 cm. , BC = 8 cm.

and AC = 10 cm. Find BD



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Sheet 9

From lesson 1 unit 3
to lesson 2 unit 5

Total mark 25

1 ***Complete the following :*** 5

(a) The area of triangle = ... ×

(b) If A (3 , 7) and B (3 , 3) , then C (..... , ...) is the midpoint of $\overline{AB}$

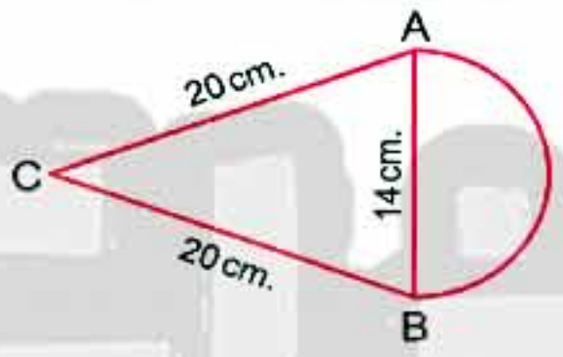
(c) The area of the parallelogram whose base length is 8 cm.
and height 2.5 cm. is cm^2.

(d) The rhombus has axes of symmetry.

(e) $\frac{\text{The circumference of the circle}}{\text{The length of the diameter}}$ = ...

2 Calculate the perimeter of the opposite figure where $\overline{AB}$ is the diameter of the circle and AB = 14 cm. 5

(Consider $\pi = \frac{22}{7}$)



3 In the cartesian coordinates plane determine the points A (1 , 1) , B (4 , 1) , C (4 , 5) , D (1 , 5) If $\overleftrightarrow{BC}$ is the axis of reflection of the figure ABCD , then determine the image of the figure ABCD 5

4 ***Which is greater in area ?*** the rhombus with diagonals lengths 7 cm. and 9 cm. or the parallelogram in which the length of base 8 cm. and its height 4 cm. 5

5 ***The following table shows the marks of 50 pupils :*** 5

Sets	2 –	4 –	6 –	8 –	10 –
Frequency	10	9	12	8	11

Represent these data by the frequency polygon.

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Sheet 10

From lesson 1 unit 3
to lesson 3 unit 5

Total mark
25

1 ***Choose the correct answer :***

5

(a) Number of axes of symmetry of square is

(0 **or** 1 **or** 2 **or** 4)

(b) The area of a triangle whose base length 5 cm. and corresponding height 6 cm. is cm^2

(30 **or** 15 **or** 25 **or** 36)

(c) If the longest chord in a circle is 14 cm. , then the circumference of the circle is cm. $\left(\pi = \frac{22}{7}\right)$

(88 **or** 44 **or** 22 **or** 11)

(d) The area of a square of side length 10 cm. = ... cm^2

(10 **or** 20 **or** 100 **or** 200)

(e) If A (2 , 3) , B (7 , 3) , then AB = ... length units.

(3 **or** 2 **or** 4 **or** 5)

2 (a) On the coordinate plane , draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$

6

(b) The area of a square is 50 cm^2 Find the length of its diagonal.

3 A librarian made an inventory of the books in his library and their types. He found the following : $\frac{1}{4}$ of the books are religious , $\frac{1}{4}$ of the books are literary , $\frac{1}{2}$ of the books are scientific.

4

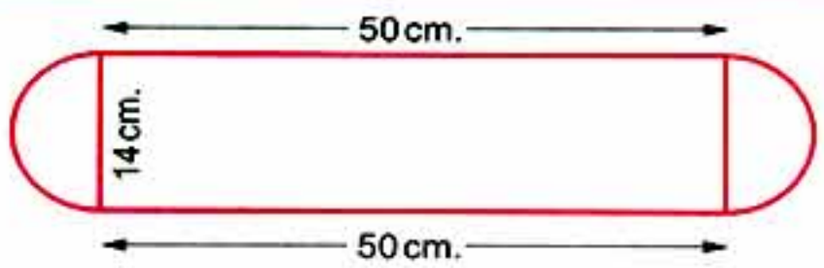
Graph that given data using a pie graph. If the total of books was 400 , find the number of each type of books.

4 ***Represent the following distribution by frequency polygon :***

5

Sets	0 –	4 –	8 –	12 –	16 –
Frequency	6	10	12	5	3

5 Calculate the perimeter of the opposite figure (Consider $\pi = \frac{22}{7}$)



5

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Sheet 11

From lesson 1 unit 3
to lesson 4 unit 5

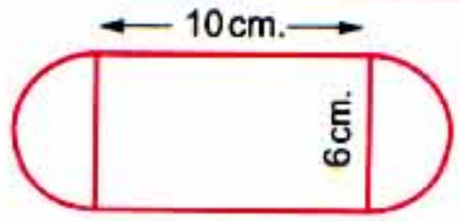
Total mark
25

1 (a) Calculate the circumference of the circle whose diameter length is 21 cm. (Consider $\pi = \frac{22}{7}$)

(b) Find the area of the triangle whose base length is 8 cm. and its corresponding height is 10 cm.

5

2 (a) Calculate the perimeter of the opposite figure (Consider $\pi = 3.14$)



6

(b) On the coordinate plane : Draw Δ ABC where A (0 , 0) , B (3 , 2) and C (3 , 5) , then draw its image by reflection in $\overleftrightarrow{BC}$

3 ***The opposite bar graph shows the number of pupils in each sport group in a school :***

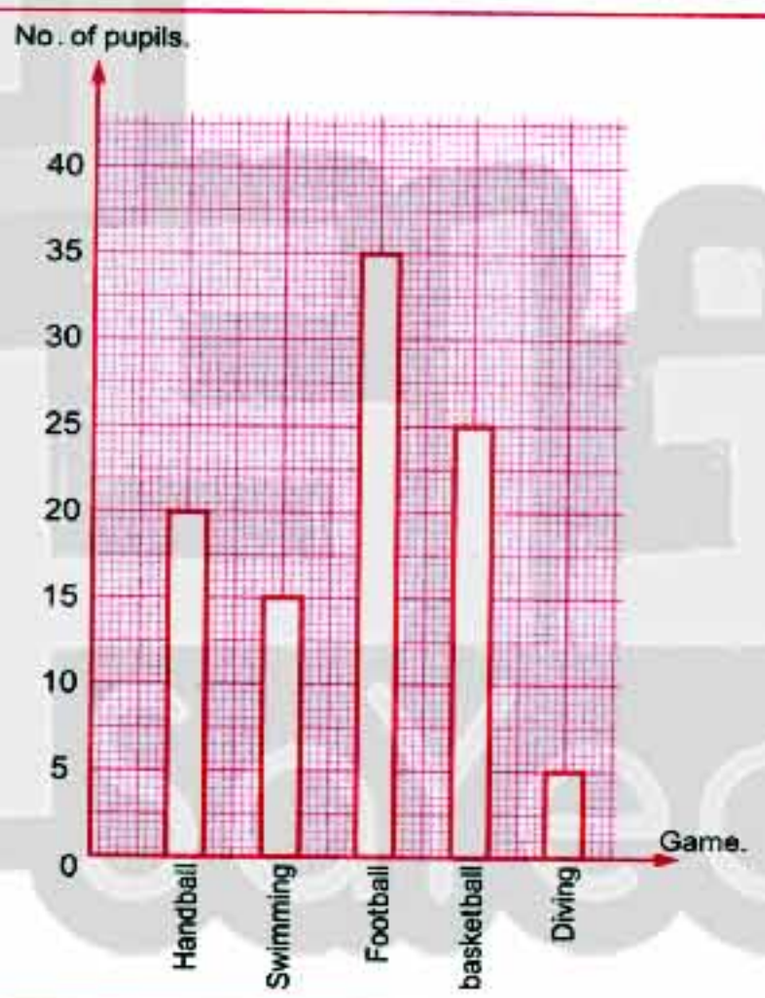
(a) What is the most popular game ?

(b) What is the least popular game ?

(c) What is the total number of pupils ?

(d) What is the increase in the number of pupils of football than the number of pupils of diving ?

(e) Which is more popular handball or basketball ?



5

4 ***Represent the following data using histogram :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	3	7	12	8	30

6

5 ***The following table represents the marks of 50 students in the math exam in a month , where the full mark is 50 :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

3

(a) Draw the frequency polygon which represents the given data.

(b) Find the number of students who got 30 marks or more.

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Model Examinations

Model 1

Answer the following questions :

1 ***Choose the correct answer :***

(1) If the longest chord in a circle is 7 cm. , then the circumference of the circle is cm. $\left(\pi = \frac{22}{7}\right)$ (3.5 *or* 7 *or* 22 *or* 44)

(2) Twice the number x subtracted 3 from it = ...

($x-3$ *or* $2x+3$ *or* $2x-3$ *or* $3-2x$)

(3) If $X = \{x : x \in \mathbb{N} , 2 \leq x \leq 3\}$, then X = ...

($\{3 , 2\}$ *or* $\{3\}$ *or* $\{2\}$ *or* $\varnothing$)

(4) (49 ÷ 7) $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

(5) The number of symmetrical axis of rhombus is

(0 *or* 1 *or* 2 *or* 4)

(6) The area of a square whose diagonal length is 8 cm. = ... cm^2.

(44 *or* 36 *or* 50 *or* 32)

(7) If x is an odd number , then $x + 2$ is

(even *or* odd *or* prime *or* otherwise)

(8) The ordered pair $(2 , 5) = (2x , 5)$, then x is

(5 *or* 3 *or* 2 *or* 1)

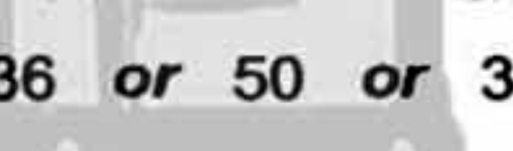
(9) The multiplicative neutral element in N is

(0 *or* 1 *or* 2 *or* 3)

(10) On the coordinate plane : M (5 , 1) , N (5 , 6)

, then MN = ... length unit. (2 *or* 5 *or* 6 *or* 8)

(11) The opposite geometric transformation is



(rotation *or* translation *or* reflection)

(12) The set of even numbers (E) ∩ the set of prime number (P) = ...

(P *or* $\{0\}$ *or* $\mathbb{N}$ *or* $\{2\}$)

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Final Examinations

(13) If the side length of a square is x and its perimeter is P , then P = ...
($4x$ **or** $x+4$ **or** $x-4$ **or** $4-x$)

(14) $(8 \times 3) \times 5 =$ $\times (3 \times 5)$ (3 **or** 5 **or** 8 **or** 35)

2 *Complete each of the following :*

(15) 1 , 4 , 8 , 13 , ... , ... (in the same pattern)

(16) The sum of two numbers is 35 , one of them is x , then the other is

(17) The base length of a triangle is 8 cm. and its height is 5 cm. , then its area = ... cm^2.

(18) The smallest counting number is

(19) 32 + (59 + ...) = (32 + 68) + ...

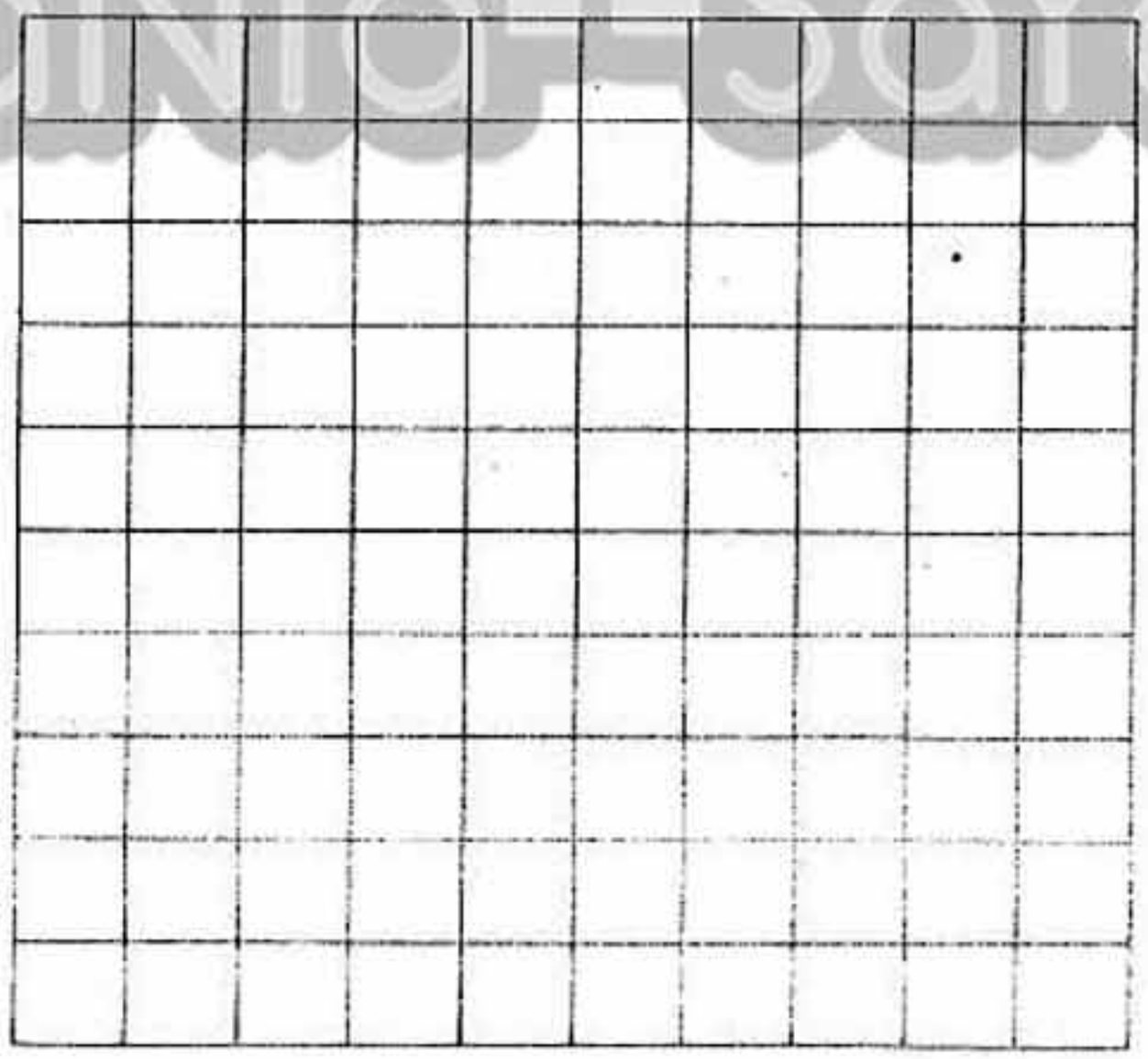
(20) The area of rhombus whose diagonals are 10 cm. and 20 cm. is cm^2.

3 *Answer the following :*

(21) By using the properties of multiplication , find the value of : $4 \times 31 \times 25$

.....

(22) In the cartesian coordinates determine the points
A (8 , 5) , B (8 , 2) , C (5 , 2) , D (5 , 7)
, then draw the figure ABCD and draw its image by reflection in $\overleftrightarrow{CD}$



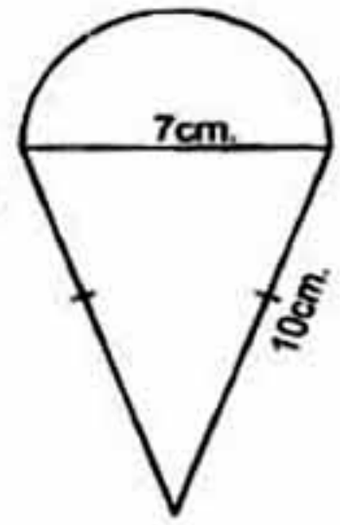
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(23) Solve in $\mathbb{N}$ the equation : $3x + 5 = 17$

.....

(24) Calculate the perimeter of opposite figure :

$\left(\pi = \frac{22}{7}\right)$



.....

.....

.....

(25) If a = 3 and b = 4 , find the numerical value of : (b – a) (b + a)

.....

(26) If the age of a man now is x years , find :

[a] The age of the man after 7 years

[b] The age of the man since 5 years

(27) A paralellogram has a base of length 14 m. and a corresponding height 9 m. Find its area.

.....

(28) If the number x exceeds twice the number y by 7 , write down the mathematical relation which relates x by y

.....

(29) Using the properties of commutative and associative in $\mathbb{N}$ to find the result of the following :

156 + 871 + 344 + 129 (Write the used property)

.....

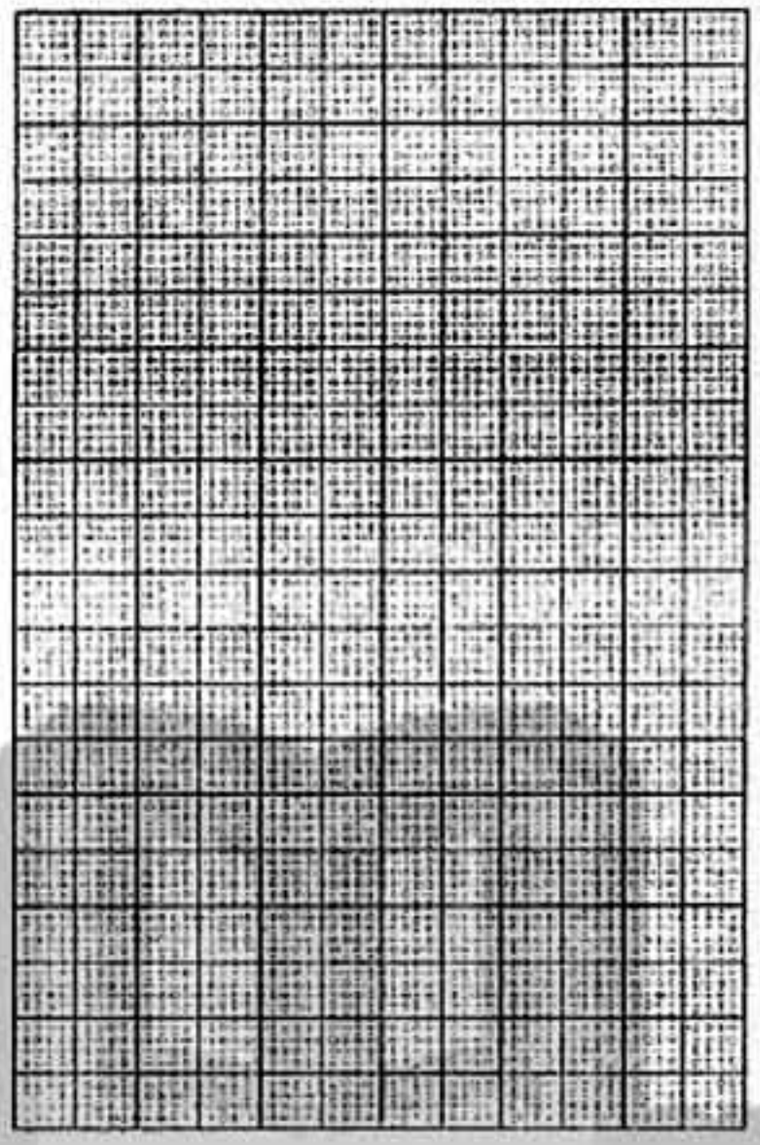
(30) The following table shows the marks of 50 pupils in mathematics exam in a month :

The sets	10 –	20 –	30 –	40 –	The total
The frequency	10	12	18	10	50

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Final Examinations

Represent the data by histogram and frequency polygon.



Model 2

Answer the following questions :

1 ***Choose the correct answer :***

(1) The square whose perimeter is 16 cm. , its area = ... cm^2

(4 *or* 16 *or* 8 *or* 7)

(2) The sum of two numbers x and y is 10 , then y = ...

($10 - x$ *or* $x - 10$ *or* $10x$ *or* $\frac{10}{x}$)

(3) The number of symmetry axes of a rectangle is

(0 *or* 1 *or* 2 *or* 3)

(4) $3 \times (2 + 10)$ = ... (30 *or* 36 *or* 40 *or* 13)

(5) If $7y = 84$, then $\frac{1}{2}y$ = ... (6 *or* 12 *or* 21 *or* 42)

(6) 1 , 3 , 9 , 27 , ... (in the same pattern)

(32 *or* 64 *or* 37 *or* 81)

(7) If O is the set of odd numbers , then O $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

(8) The rectangle whose length 7 cm. and width 3 cm. , its perimeter = ... cm. (21 *or* 10 *or* 20 *or* 13)

(9) The additive identity element in $\mathbb{N}$ is (0 *or* 1 *or* 2 *or* 3)

(10) $32 \times 53 + 32 \times$ $= 32 \times 100$ (53 *or* 47 *or* 37 *or* 23)

(11) The area of parallelogram = ... ($b + h$ *or* $b - h$ *or* $b \times h$ *or* $\frac{b}{h}$)

(12) The area of a rhombus equals 24 cm^2 and the length of one of its diagonals is 8 cm. , then the length of the other diagonal = ... cm. (3 *or* 6 *or* 8 *or* 12)

(13) The difference between three times a number and two is ($3x + 2$ *or* $3x - 2$ *or* $2 \times 3x$ *or* $\frac{3x}{2}$)

(14) $(7 \times 3 - 3 \times 7)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

2 *Complete each of the following :*

(15) If A (3 , 4) , B (5 , 2) , then the coordinate of the midpoint of $\overline{AB}$ is (..... , ...)

(16) The opposite geometric transformation  is

(17) If the perimeter of an equilateral triangle is 18 cm. and its area is 15 cm^2 , then its height is cm.

(18) The diameter length of a circle whose circumference is 88 cm. = ... cm. $\left(\pi = \frac{22}{7}\right)$

(19) An odd number × an even number = ... number.

(20) The isosceles trapezium has axis of symmetry.

3 *Answer the following :*

(21) Solve the equations in $\mathbb{N}$:

[a] $2x - 5 = 3$ [b] $a + 7 = 20$

.....

.....

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Final Examinations

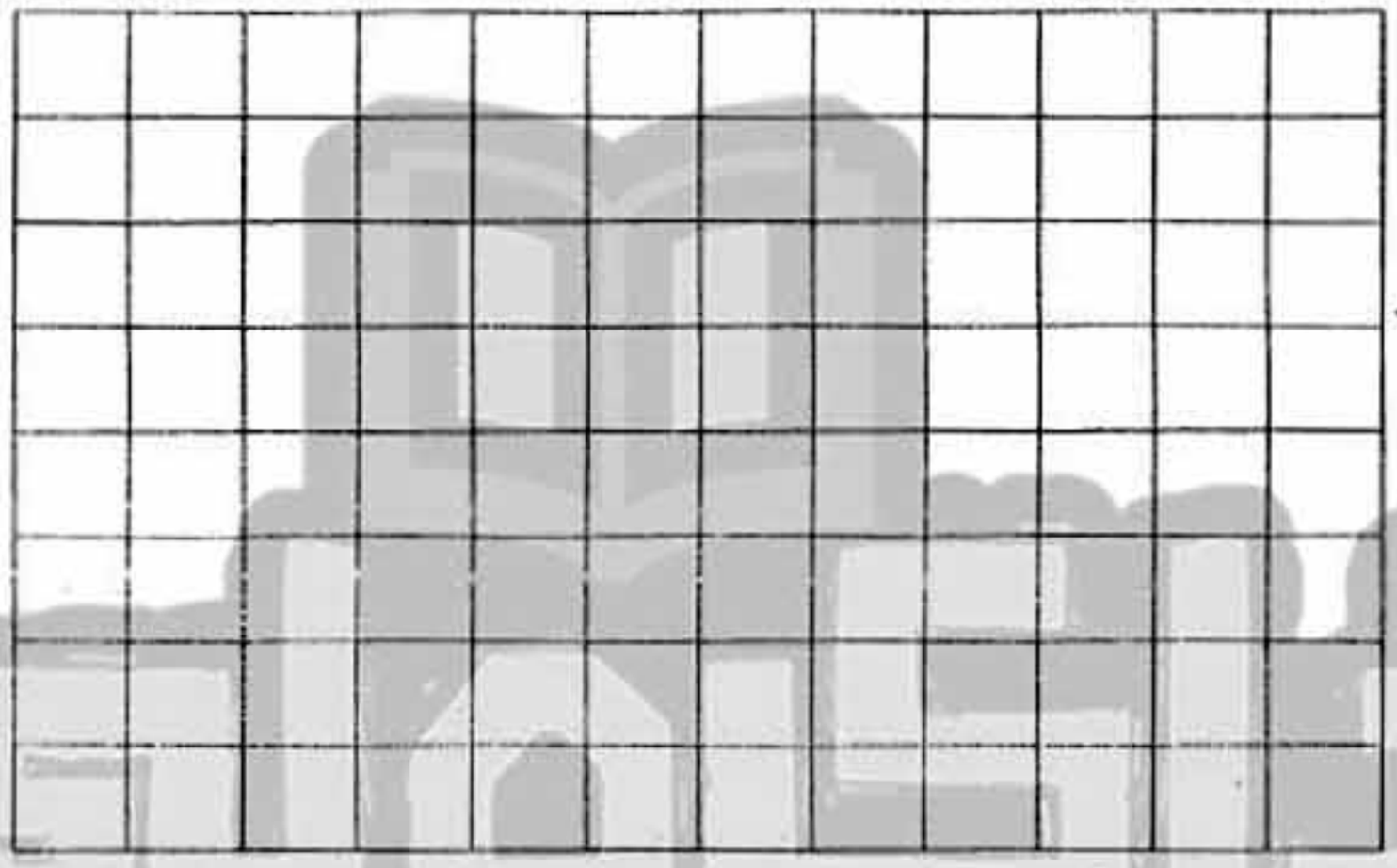
(22) Which is greater in area ?

A square with its diagonal length 12 cm. or a rhombus with the length of its diagonals are 15 cm. and 10 cm.

.....

.....

(23) On the coordinate plane draw Δ ABC where A (2 , 1) , B (5 , 1) , C (5 , 5) , then draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$

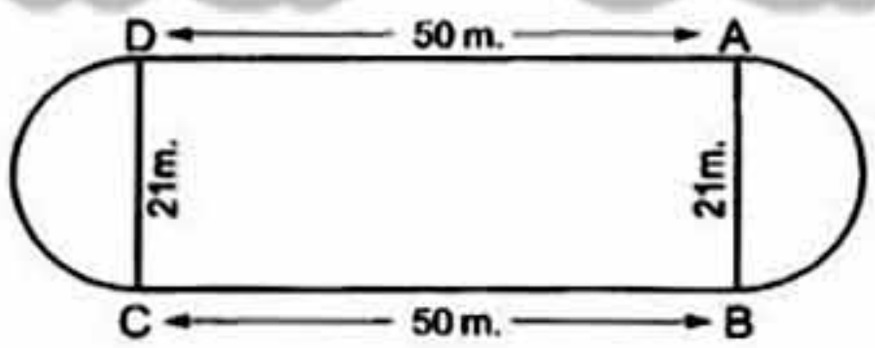


(24) Using the properties of addition in ℕ , find : 55 + 36 + 45 + 64

.....

(25) Find the perimeter of the figure where AB = 21 m. and AD = 50 m.

$\left(\pi = \frac{22}{7}\right)$



.....

.....

.....

(26) Use the properties to find the result : 8 × 47 × 125

.....

(27) If a = 3 , b = 4 , c = 0 , find the value of : 2 × a + 5 × b – c

.....

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(28) Use the distribution property to find : $37 \times 46 + 37 \times 54$

.....

(29) If $X = \{2 , 3 , 4 , 5\}$ and Y is the set of factors of 6 , then find the following :

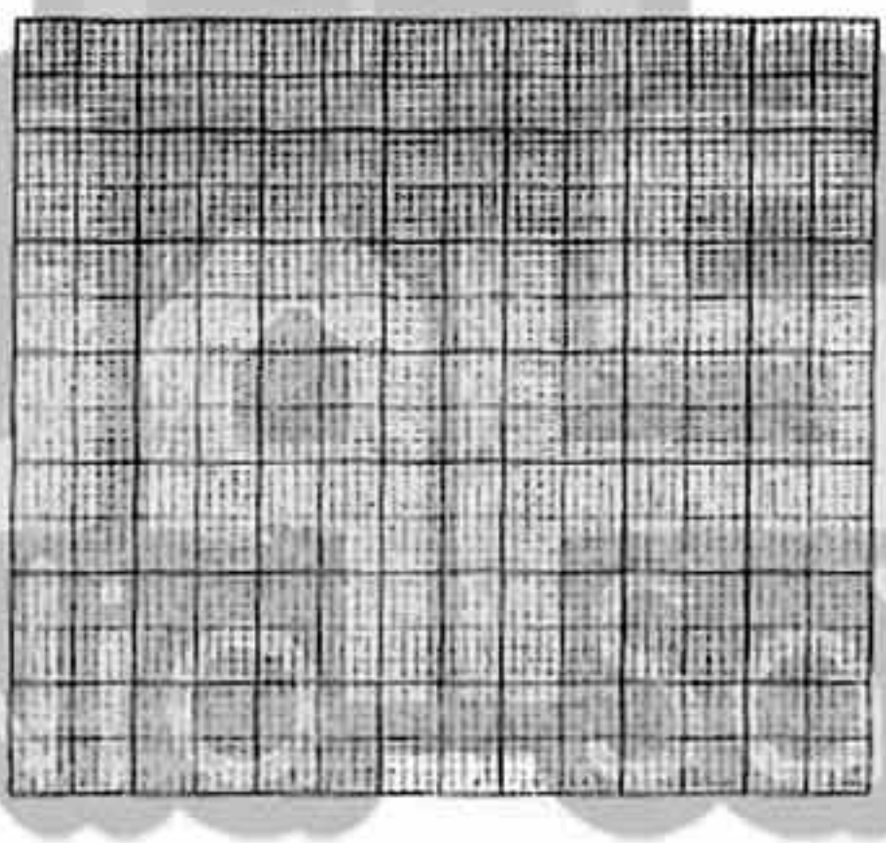
[a] $X \cap Y$ **[b]** $X \cup Y$

.....

(30) The following table shows the recorded temperatures in 40 cities on a day :

Temperature	20 –	22 –	24 –	26 –	28 –	Total
No. of cities	7	9	11	8	5	40

Represent these data by a histogram.



Model 3

Answer the following questions :

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1 ***Choose the correct answer :***

(1) If $86 \times 15 = 86 \times a + 86 \times 10$, then a = ...

(1 *or* 5 *or* 15 *or* 10)

(2) $\{2 , 3\} \cap \{1 , 4\}$ = ...

($\varnothing$ *or* $\{1 , 2 , 3 , 4\}$ *or* $\{2 , 3\}$ *or* $\{1 , 4\}$)

(3) The area of the rhombus of diagonal length 7 cm. and 10 cm.

is cm^2. (17 *or* 70 *or* 35 *or* 40)

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(4) If x is an odd number , then $x + 3$ is number.
(odd *or* even *or* prime *or* otherwise)

(5) The number of axes symmetry of square is
(1 *or* 2 *or* 3 *or* 4)

(6) If $x + 8 = 15$, then x = ... (3 *or* 7 *or* 6 *or* 5)

(7) The diameter length of a circle whose circumference is 88 cm. equals $\left(\pi = \frac{22}{7}\right)$ (28 *or* 14 *or* 7 *or* 21)

(8) If three times a number subtracted from 15 , then the expression that expresses this is
($3x + 15$ *or* $15 - 3x$ *or* $3x - 15$ *or* $x - 15$)

(9) The square whose area is 36 cm^2 , the length of its side = ... cm.
(5 *or* 6 *or* 3 *or* 7)

(10) The multiplicative neutral element in $\mathbb{N}$ – the additive neutral element in $\mathbb{N}$ = ... (0 *or* 1 *or* 2 *or* 3)

(11) If $x = 2$ and $y = 3$, then $5xy$ = ... (10 *or* 11 *or* 13 *or* 30)

(12) The midpoint between (1 , 5) and (5 , 5) is
((5 , 3) *or* (3 , 5) *or* (5 , 1) *or* (5 , 5))

(13) The opposite geometric transformation ⇨ ⇦ is
(translation *or* reflection *or* rotation)

(14) The perimeter of rectangle is 20 cm. , and its width is x cm. , then its length is ($10 - x$ *or* $20 - x$ *or* $x - 10$ *or* $x - 20$)

2 *Complete each of the following :*

(15) 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

(16) 75 + 89 = 89 + 75 (..... property)

(17) If 945 = ($x \times 100$) + 45 , then x = ...

(18) The area of the parallelogram whose base length is 8 cm. and height 2.5 cm. is cm^2

(19) The symmetry axis divides the figure into two halves.

(20) If $x \in \mathbb{N}$, $2x = 8$, then x = ...

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3 ***Answer the following :***

(21) Solve the equation in $\mathbb{N}$: $5x - 2 = 8$

.....

(22) Use the properties of addition and multiplication to find the value of :

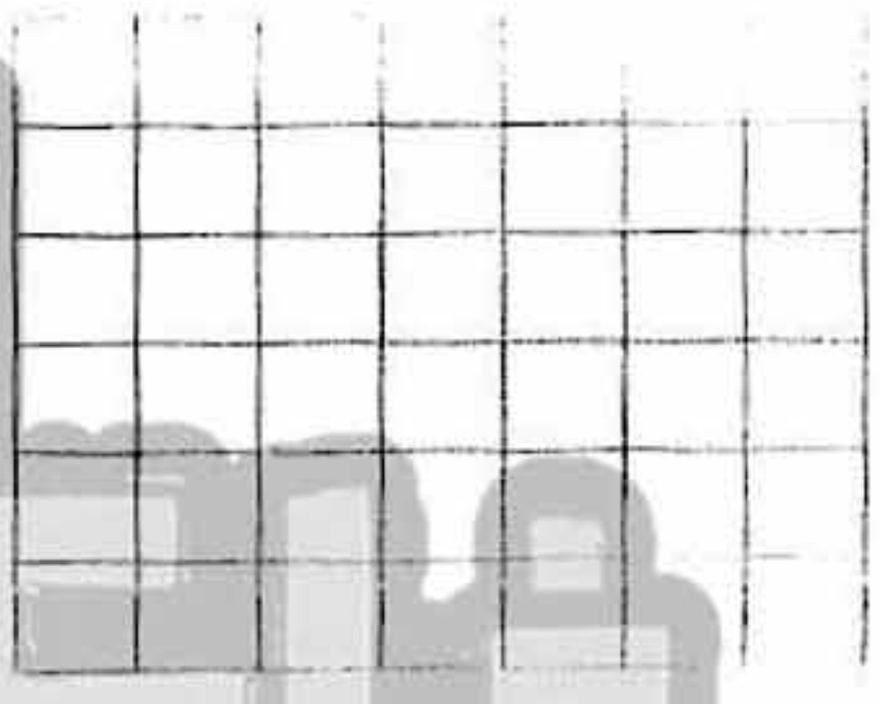
[a] $45 \times 27 - 45 \times 27$ **[b]** $28 + 36 + 72 + 64$

.....

(23) In 2-dimensional coordinate plane locate the points A (3 , 1) , B (5 , 1) , C (5 , 3) and D (3 , 3) Name the figure ABCD , then find its area.

.....

.....



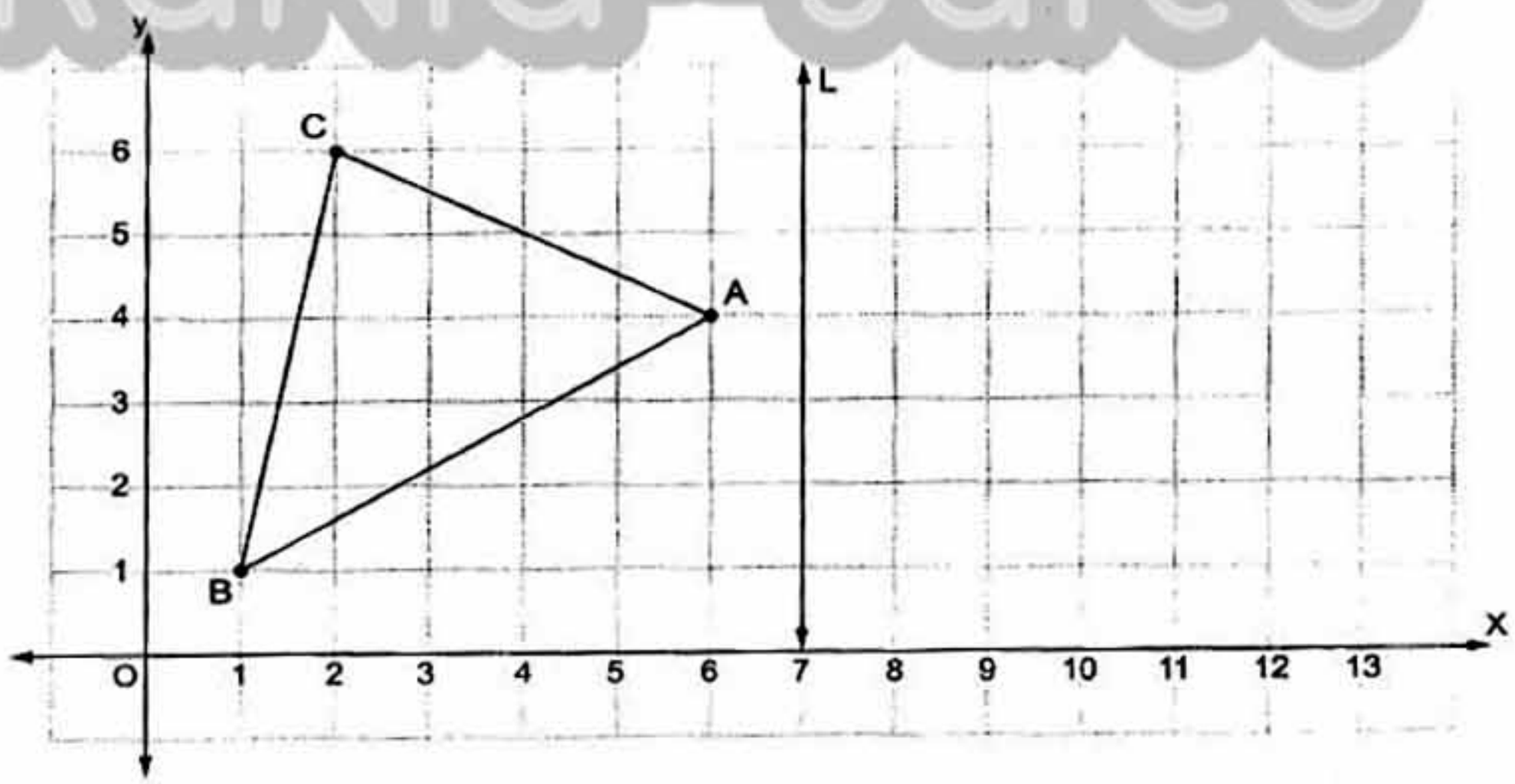
.....

(24) If $X = \{a : a \in \mathbb{N} , 1 \leq x < 5\}$, $Y = \{4 , 5 , 6\}$, find :

[a] $X \cap Y$ **[b]** $X \cup Y$ **[c]** $X - Y$

.....

(25) In the cartesian coordinates plane , from the following figure :



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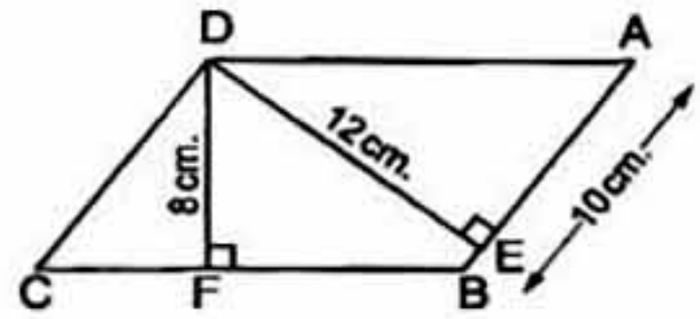
[a] Complete :

A (..... , ...) , B (..... , ...) and C (..... , ...)

[b] If L is the axis of reflection of the Δ ABC , draw Δ $\grave{A}\grave{B}\grave{C}$

the image of Δ ABC by reflection in the straight line L

(26) In the opposite figure :



ABCD is a parallelogram in which

AB = 10 cm. , DE = 12 cm. , DF = 8 cm.

Find : **[a]** The area of the parallelogram ABCD

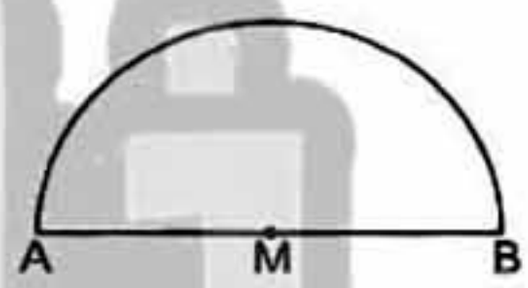
[b] The length of $\overline{BC}$

.....

.....

(27) In the opposite figure :

Calculate the perimeter of the figure where AM = 35 cm. $\left(\pi = \frac{22}{7}\right)$



.....

(28) An employee spends his salary as following :

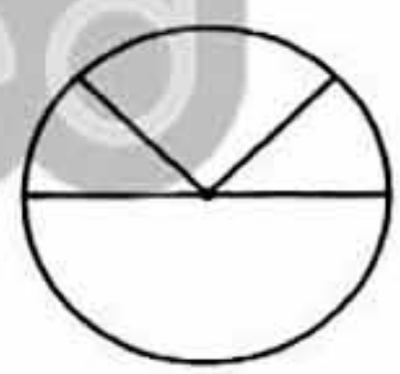
L.E. 200 for clothes.

L.E. 800 for food.

L.E. 400 for transportation and medicine.

L.E. 200 for renting.

Graph that data on the opposite pie graph.



(29) Which is greater in area ?

Asquare whose diagonal is 10 cm. or a rhombus of area 80 cm^2.

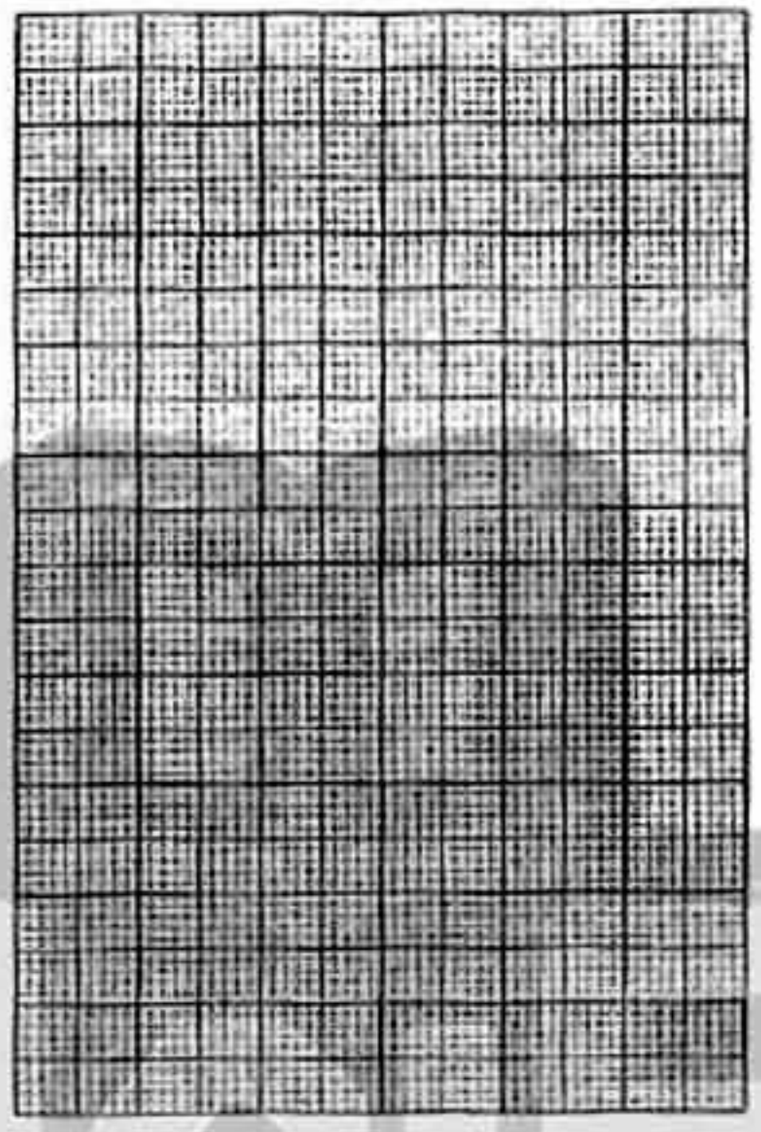
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(30) Represent the following data by a frequency ploygon :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50



Model 4

Answer the following questions :

1 ***Choose the correct answer :***

(1) The next number in the pattern 5 , 35 , 65 , ... is

(70 *or* 95 *or* 105 *or* 115)

(2) If $X = \{x : x \in \mathbb{N} , x < 3\}$, then X = ...

($\{1 , 2\}$ *or* $\{2\}$ *or* $\{0 , 1 , 2\}$ *or* $\varnothing$)

(3) The number of axes of symmetry of the rhombus equals

(zero *or* 1 *or* 2 *or* 4)

(4) The circumference of the circle its radius 5 cm. = ... π cm.

(10 *or* 5 *or* 20 *or* 4)

(5) $53 \times 16 = 16 \times$ (35 *or* 61 *or* 53 *or* 16)

(6) If 10 = 2 y , then the value of y is (5 *or* 6 *or* 8 *or* 14)

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(7) The multiplicative neutral element in $\mathbb{N}$ is
(0 *or* 1 *or* 2 *or* 3)

(8) Subtracting 5 from double the number x = ...
($x-5$ *or* $2x-5$ *or* $5-2x$ *or* $5x$)

(9) The area of rhombus whose diagonals are 6 cm. and 8 cm.
= cm^2. (48 *or* 14 *or* 24 *or* 100)

(10) (49 ÷ 8) $\mathbb{N}$ ($\subset$ *or* $\not\subset$ *or* $\in$ *or* $\notin$)

(11) If x is an odd number , then $x + 3$ is number.
(odd *or* even *or* prime *or* otherwise)

(12) If $x + 5 = 7$, $x \in \mathbb{N}$, then x = ... (1 *or* 2 *or* 3 *or* 4)

(13) The triangle whose base length is 5 cm. and the corresponding heigth of it is 8 cm. , its area = ... cm^2.
(13 *or* 20 *or* 26 *or* 40)

(14) On the coordinate plane : M (1 , 2) , N (1 , 8) , then MN = ... length units. (2 *or* 5 *or* 6 *or* 8)

2 *Complete each of the following :*

(15) Area of parallelogram = ... ×

(16) If A , B and C are natural numbers , then $(A \times B) \times C = A \times (B \times C)$ called property.

(17) The set of even numbers $\cap$ the set of odd numbers = ...

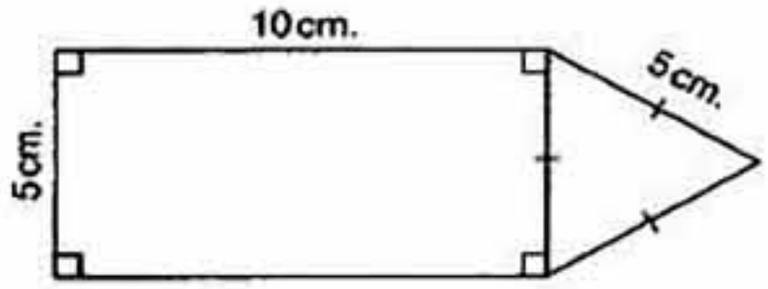
(18) The perimeter of the equilateral triangle whose side length is ℓ cm. = ... cm.

(19) The set of prime numbers which are less than 17 is

(20) The square whose perimeter is 32 cm. , its area = ... cm^2.

3 *Answer the following :*

(21) Find the perimeter of the opposite figure :



.....

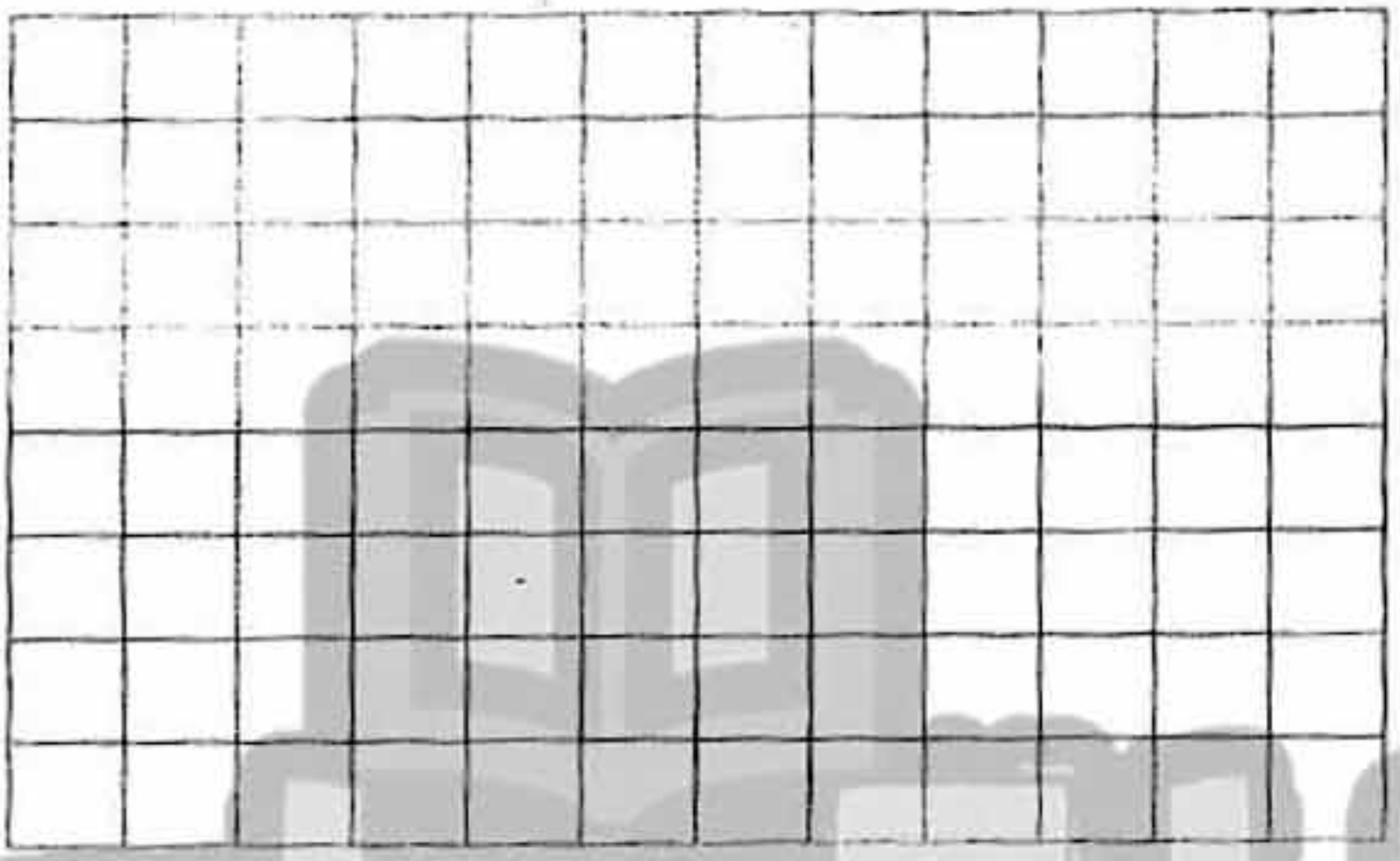
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(22) In the cartesian coordinates plane , locate the points

A (2 , 2) , B (5 , 2) , C (5 , 6)

[a] Find the length of each of $\overline{AB}$ and $\overline{BC}$

[b] Draw the image of figure ABC by reflection in $\overleftrightarrow{BC}$



(23) Use the properties of the operations to find :

[a] 872 + 199 + 128 + 801 **[b]** 56 × 1001

.....

.....

(24) Solve the equations :

[a] $2x + 9 = 21$, $x \in \mathbb{N}$ **[b]** $x - 5 = 2$, $x \in \mathbb{N}$

.....

.....

(25) If the number x exceeds twice the number y by 9

Write the mathematical relation between x and y

.....

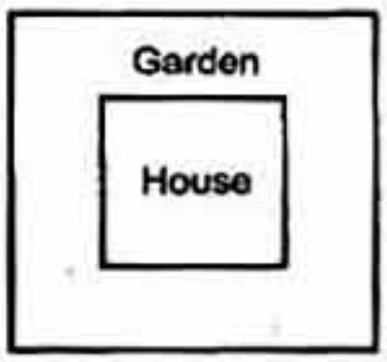
(26) Two circles the diameter of the first is 10 cm. and the diameter of the second is 15 cm. , find the difference between their circumferences. ($\pi = 3.14$)

.....

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(27) A square shaped piece of land with diagonal length 25 m. and a square shaped house with side length 15 m. has been built on it and the left part used as a garden , find the area of the garden.



.....

.....

(28) Use the properties of commutative and associative in $\mathbb{N}$ to find the result of : $8 \times 43 \times 125$

.....

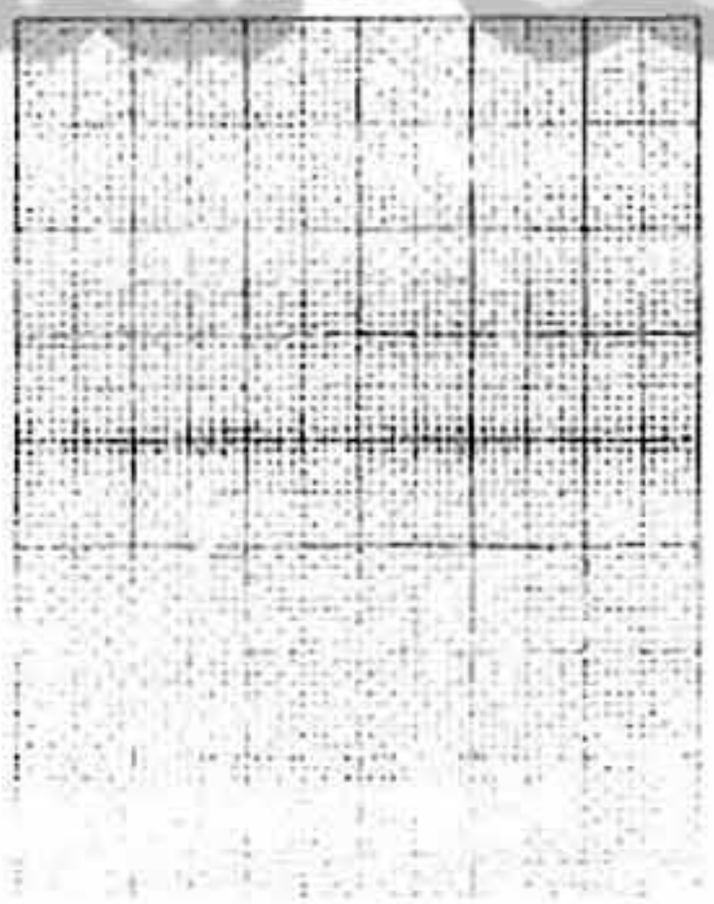
(29) Solve the equation : $x \times 3 + x \times 60 = 4 \times 63$

.....

(30) The following table shows the frequency distribution of the number of work hours of 50 workers :

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the histogram which represents these data.



Rania Sayed

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Model 5

Answer the following questions :

1 ***Choose the correct answer :***

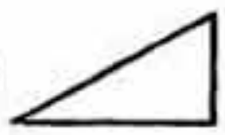
(1) If $(x + 2) \times 7 = 7 \times 8$, then x = ... (6 *or* 7 *or* 8 *or* 56)

(2) If the difference between two numbers is 5 the smaller number is y , then the greater number is

(5 y *or* 5 – y *or* y – 5 *or* y + 5)

(3) The isosceles triangle has line(s) of symmetry.

(1 *or* 2 *or* 3 *or* 4)

(4) The shaded triangle is the image of the other triangle  by a

(perimeter *or* translation *or* reflection *or* rotation)

(5) The length of diagonal of rhombus its area 20 cm^2 and the length of the other diagonal is 8 cm. = ... cm. (5 *or* 10 *or* 4 *or* 6)

(6) $\frac{0}{7}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(7) The area of a square whose diagonal length 6 cm. is cm^2

(18 *or* 36 *or* 12 *or* 24)

(8) The additive neutral element in $\mathbb{N}$ is (0 *or* 1 *or* 2 *or* 3)

(9) If $3x = 12$, then $x + 3$ = ... (4 *or* 6 *or* 7 *or* 10)

(10) The circumference of the circle = ...

(2 d π *or* 2 π *or* π r *or* 2 π r)

(11) $5 \times (100 -$$) = 5 \times 99$ (1 *or* 2 *or* 99 *or* 0)

(12) If E is the set of even numbers , then E $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(13) If (5 , 6) , then y coordinate = ... (1 *or* 6 *or* 11 *or* 5)

(14) If $X = \{x : x \in \mathbb{N} , 3 < x < 4\}$, then X = ...

($\varnothing$ *or* {3 , 4} *or* {3} *or* {4})

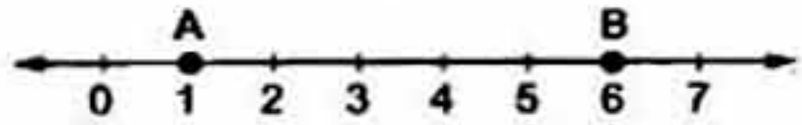
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2 ***Complete each of the following :***

(15) 2 , 7 , 12 , 17 , ... , ... (in the same pattern)

(16) **In the opposite figure :**



The length of $\overline{AB}$ = ... length units.

(17) If the longest chord in a circle is 7 cm. , then the circumferene of the circle is cm. $\left(\text{where } \pi = \frac{22}{7}\right)$

(18) Adding to the double of x is written as

(19) The area of triangle = ... ×

(20) $\mathbb{N} - \{0\}$ = ...

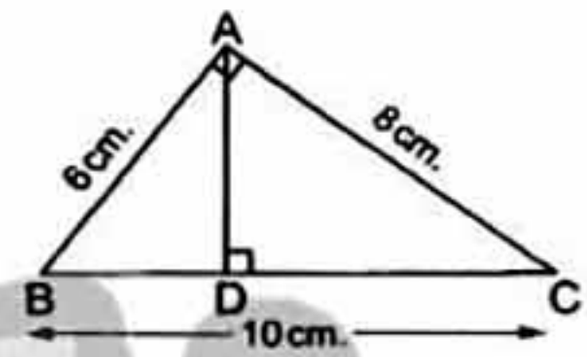
3 ***Answer the following :***

(21) ABC is a right-angled triangle at A ,

AB = 6 cm. , AC = 8 cm. and BC = 10 cm.

Find : [a] The area of Δ ABC

[b] The length of $\overline{AD}$



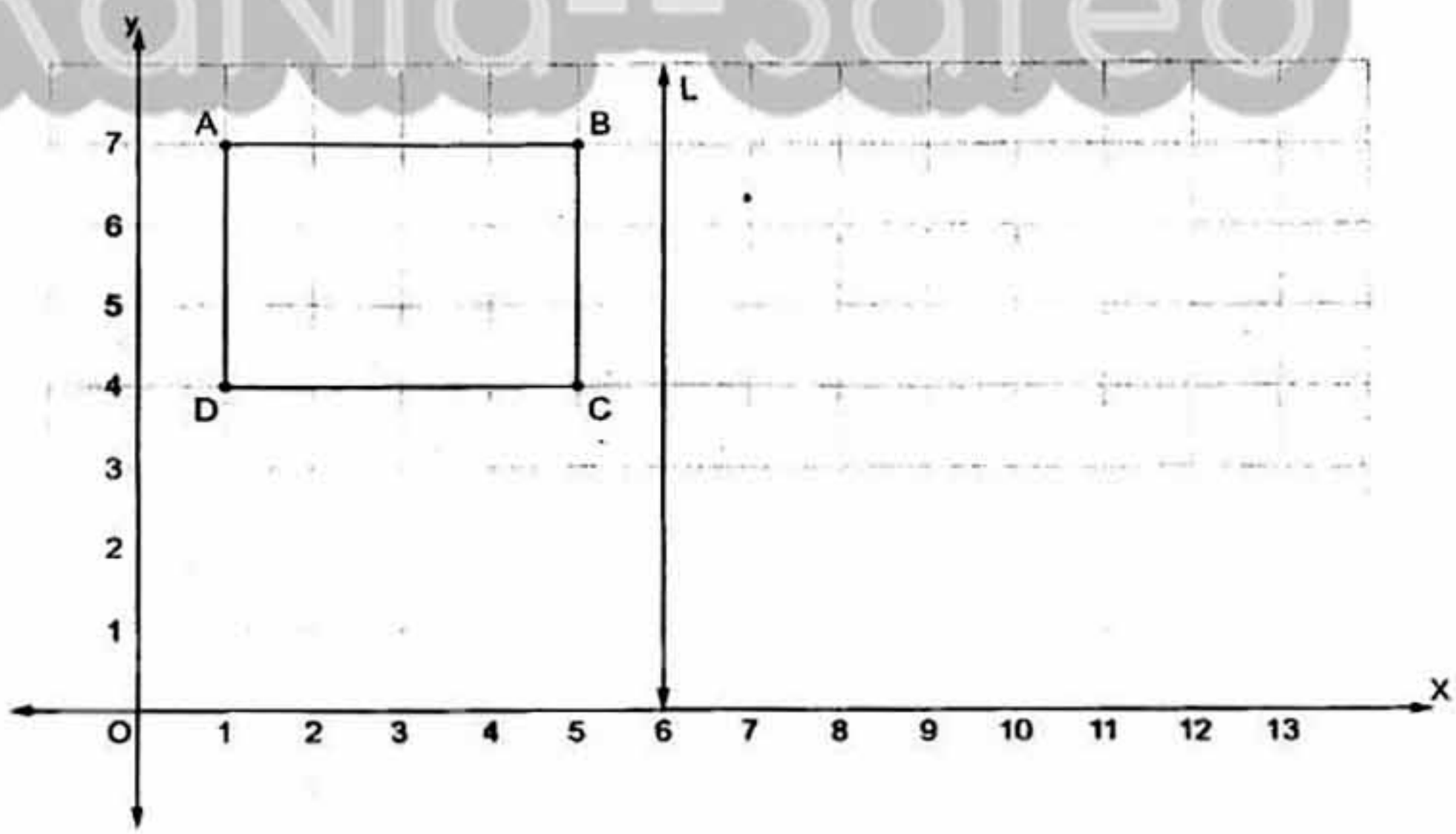
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(22) Use the properties of addition to find : 71 + 82 + 29 + 18

.....

(23) In the cartesian coordinate plane , from the following figure :



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[a] Complete :

A (..... , ...) , B (..... , ...)

C (..... , ...) , D (..... , ...)

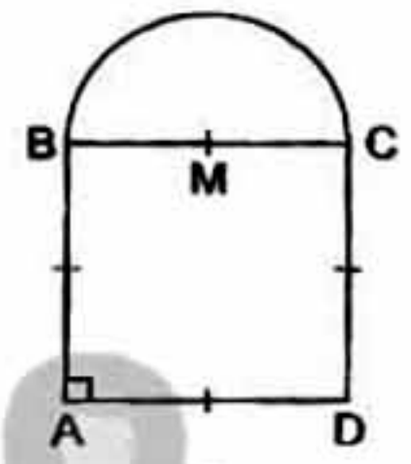
[b] If L is the axis of reflection of the figure ABCD , find the image of the figure by reflection in the straight line L , then complete :

$\grave{A}$ (..... , ...) , $\grave{B}$ (..... , ...)

$\grave{C}$ (..... , ...) , $\grave{D}$ (..... , ...)

(24) In the opposite figure :

The perimeter of the square ABCD = 56 cm. , find the perimeter of the whole figure.



.....

(25) Use the distribution property to find the value of : 18×99

.....

(26) Solve the equation : $2x + 3 = 23$ where $x \in \mathbb{N}$

.....

(27) Calculate using commutative and associative properties : $2 \times 347 \times 5$

.....

(28) Find the height of the parallelogram with area 48 cm^2 and its base is 8 cm. long.

.....

(29) If $x = 3$, $y = 2$ and $z = 5$, find the following :

[a] $x \times y + y \times z$ **[b]** $(x - y) \times z$

.....

.....

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(30) The opposite bar graph shows the number of pupils in each sport group in a school :

[a] What is the most popular game ?

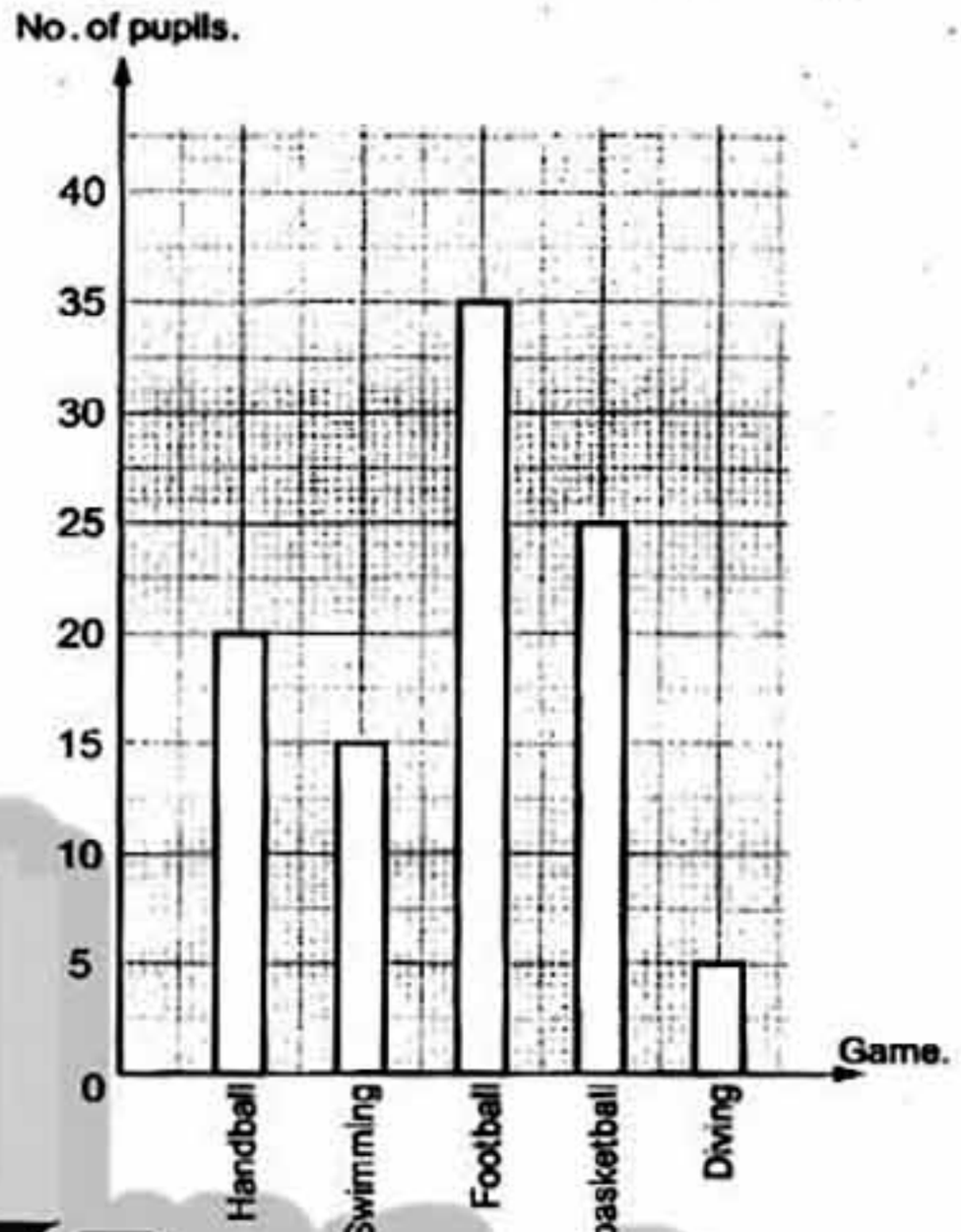
.....

[b] What is the least popular game ?

.....

[c] What is the total number of pupils ?

.....



Model 6

Answer the following questions :

1 ***Choose the correct answer :***

(1) If the age of a man is x now , then his age after 7 years is

($x+7$ *or* $x-7$ *or* $7x$ *or* $7-x$)

(2) The square whose area is 8 cm^2 , the length of its diagonal = ... cm.

(32 *or* 4 *or* 8 *or* 16)

(3) The rhombus has line(s) of symmetry.

(zero *or* 1 *or* 2 *or* 4)

(4) The circumference of a circle with diameter length 14 cm. = ... π cm.

(7 *or* 14 *or* 28 *or* 16)

(5) If $3x = 15$, $x \in \mathbb{N}$, then $x + 1$ = ... (3 *or* 4 *or* 5 *or* 6)

(6) The least prime number × any prime number = ... number.

(odd *or* even *or* prime *or* otherwise)

(7) If we multiply the number x by 7 , then we subtract from the result 3 , we shall get

($7x+3$ *or* $3x+7$ *or* $7x-3$ *or* $3-7x$)

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(8) The length of the base of a triangle whose area is 240 cm^2 and its height = 10 cm. is cm. (12 *or* 24 *or* 48 *or* 2400)

(9) If $X = \{x : x \in \mathbb{N} , 3 < x \leq 5\}$, then X = ...

($\{4 , 5\}$ *or* $\{4\}$ *or* $\{3 , 4\}$ *or* $\{5\}$)

(10) The midpoint between (1 , 2) and (7 , 2) is

((3 , 2) *or* (4 , 2) *or* (2 , 3) *or* (2 , 4))

(11) triangle has three sides are equal in length.

(Obtuse *or* Scalene *or* Equilateral *or* Isosceles)

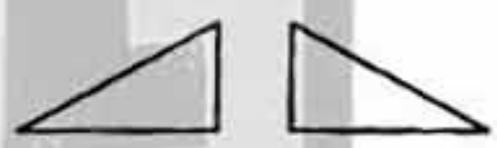
(12) $37 \times 100 - 37 \times$ $= 37 \times 15$ (115 *or* 75 *or* 85 *or* 63)

(13) If $x = 2$ and $y = 3$, then $5 x y =$ (10 *or* 11 *or* 13 *or* 30)

(14) 213 + 57 = 57 + 213 is called property. (commutative *or* closure *or* associative *or* additive identity element)

2 *Complete each of the following :*

(15) The opposite transformation is



(16) 8 , 11 , 14 , ... (in the same pattern)

(17) $\{2 , 3\} \cap \{1 , 4\} =$

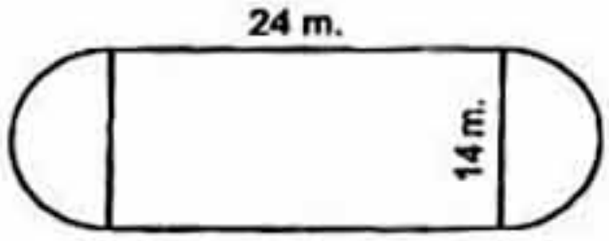
(18) The area of the parallelogram = ... ×

(19) $45 \times (37 + 63) = 45 \times$ = ...

(20) If we add 9 to four times of number z , then we get

3 *Answer the following :*

(21) The opposite figure shows a football playground , find the distance around the figure $\left(\text{where } \pi = \frac{22}{7}\right)$

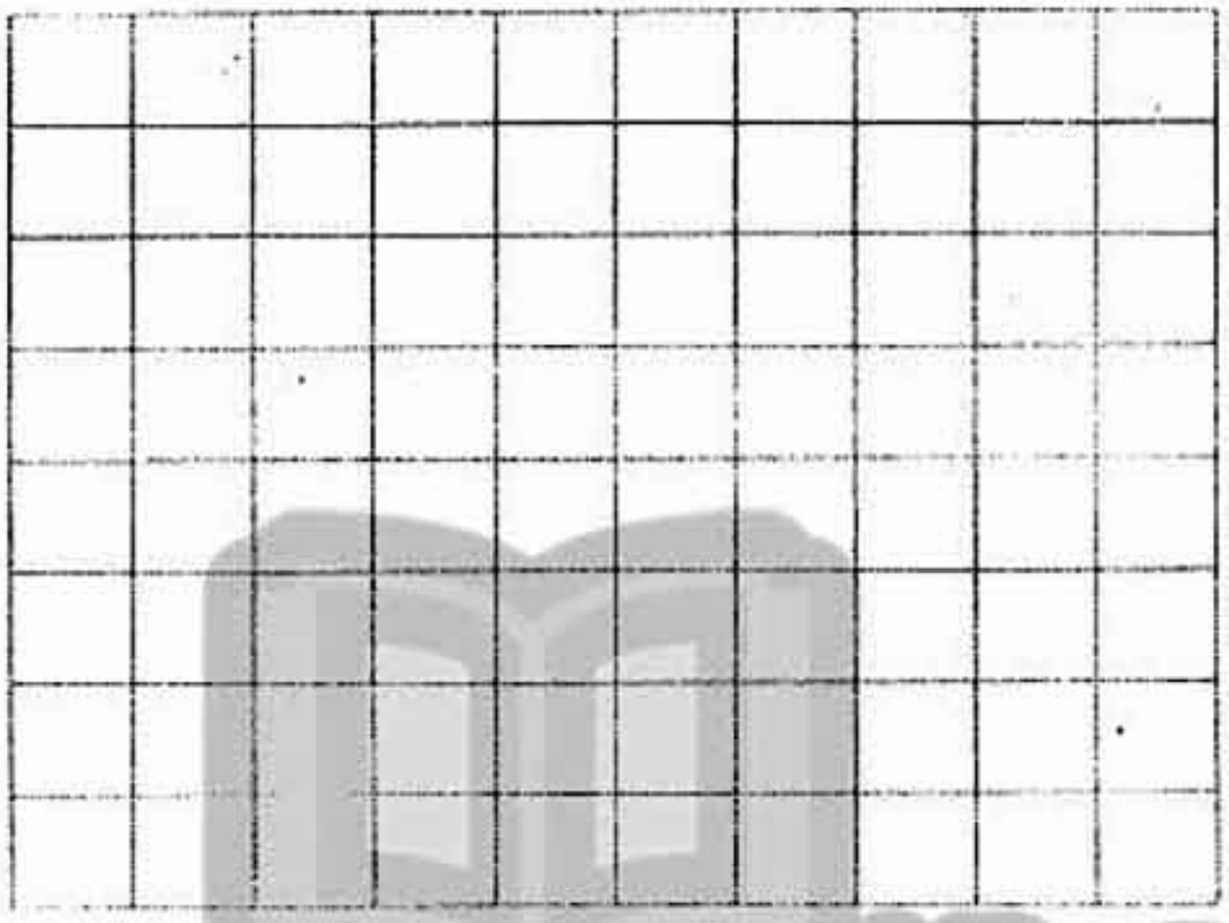


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Final Examinations

(22) In a coordinate plane , draw the figure ABCD in which A (2 , 3) , B (2 , 5) , C (5 , 5) and D (5 , 2) , then draw its image by reflection across $\overleftrightarrow{CD}$



(23) Use the properties of addition operation in $\mathbb{N}$ to find the result of :

$72 + 89 + 28 + 11$

.....

.....

(24) Solve the following equation in $\mathbb{N}$: $\frac{1}{7}x - 2 = 3$

.....

.....

(25) Find the area of a rhombus with diagonal length 6 cm. and 9 cm.

.....

.....

(26) Use the distributive property to find : 26×999

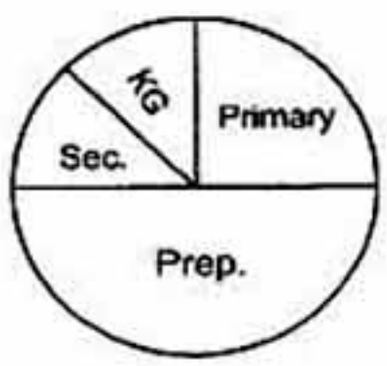
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(27) Noticing the opposite pie graph ,

a school has 1000 students :

[a] What is the number of students in the primary stage ?



.....

[b] What is the number of students in the KG stage ?

.....

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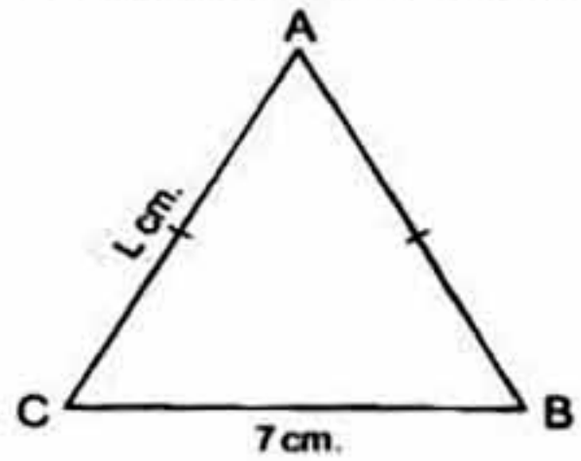
(28) Use the properties of multiplication to find : $8 \times 69 \times 125$

.....

(29) In the opposite figure :

ABC is an isosceles triangle.

Find the perimeter of the triangle.

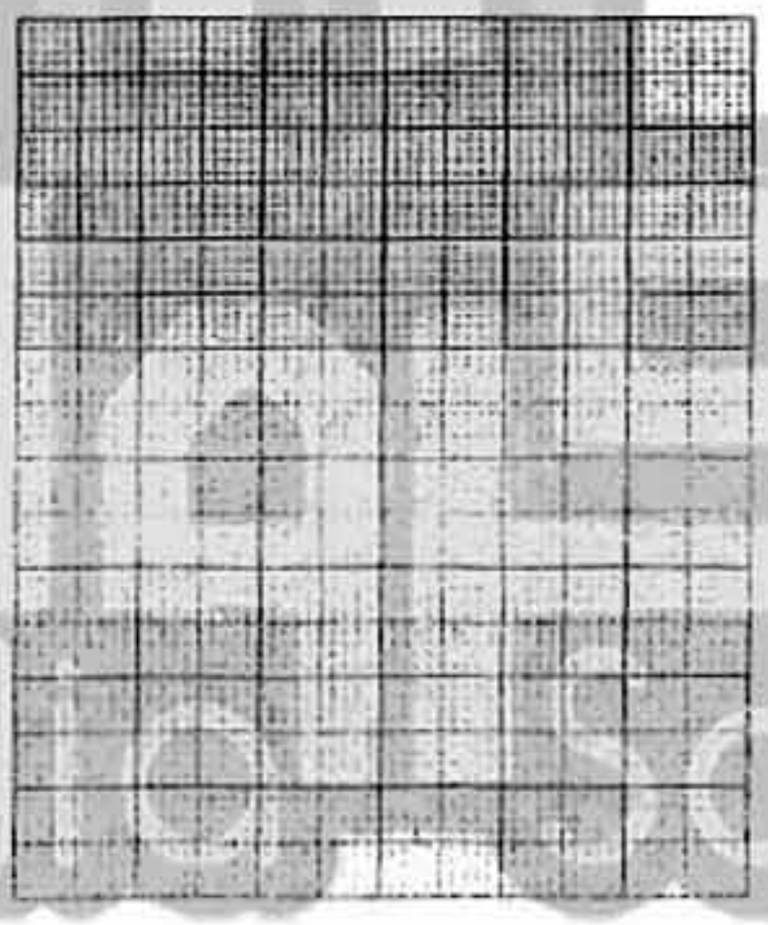


.....

(30) The following table represents the marks of students in math exam :

Sets	10 –	20 –	30 –	40 –
Frequency	7	12	10	9

Draw the frequency polygon of these data.



Model 7

Answer the following questions :

1 ***Choose the correct answer :***

(1) The number of axes of symmetry of rhombus equals

(zero *or* 1 *or* 2 *or* 4)

(2) If $7 \times 21 = 21 \times x$, then x = ... (7 *or* 3 *or* 21 *or* 147)

(3) Sama saved L.E. y and her father gave her L.E. 12 , then she has L.E.

($y - 12$ *or* $12\,y$ *or* $\frac{y}{12}$ *or* $y + 12$)

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Final Examinations

(4) The area of square whose perimeter is 24 cm. equals cm^2.
(24 **or** 36 **or** 16 **or** 20)

(5) 0.15 $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

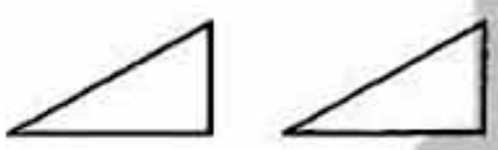
(6) If $x + 1 = 3$, then $2x =$ (2 **or** 3 **or** 4 **or** 8)

(7) 1 , 4 , 9 , 16 , ... (in the same pattern)
(32 **or** 24 **or** 27 **or** 25)

(8) If the sum of two numbers A and B is 35 , then B = ...
(A – 35 **or** 35 A **or** 35 – A **or** A + 35)

(9) If $y = 5x + 9$, then the constant is (5 **or** 6 **or** 9 **or** 8)

(10) The shaded triangle is the image of the other triangle by a
(reflection **or** rotation **or** translation)



(11) The multiplicative neutral element in $\mathbb{N}$ × the additive neutral element in $\mathbb{N}$ = ...
(0 **or** 1 **or** 2 **or** 3)

(12) If the base length of a triangle is 8 cm. and its height is 5 cm. , then its surface area = ... cm^2. (30 **or** 13 **or** 40 **or** 20)

(13) The area of a rhombus whose diagonals 10 cm. and 20 cm. is cm^2. (200 **or** 30 **or** 100 **or** 400)

(14) If $x\,(75 + 10) = 9 \times 85$, then x = ... (5 **or** 85 **or** 9 **or** 8)

2 *Complete each of the following :*

(15) $\dfrac{\text{The circumference of the circle}}{\text{The length of the diameter}}$ = ...

(16) The natural number between $\frac{9}{3}$ and $\frac{15}{3}$ is

(17) The set of even numbers (E) ∪ the set of odd numbers (O) = ...

(18) The length of the diagonal of a square with area 72 cm^2. = ... cm.

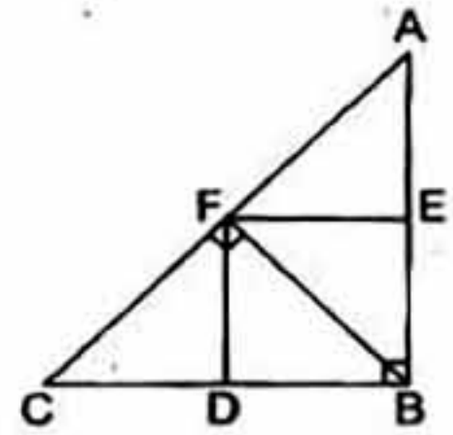
(19) $53 \times 164 + 47 \times$ $= 164 \times 100$

(20) The perimeter of equilateral triangle whose side lengthis x cm.
= cm.

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

3 ***Answer the following :***

(21) In the opposite figure , complete :



[a] Δ AEF is the image of Δ BEF by reflection in

[b] Δ ABF is the image of Δ CBF by reflection in

[c] Δ EBF is the image of Δ by reflection in $\overleftrightarrow{BF}$

(22) If $x = 2$, $y = 1$ and $z = 7$, find the value of :

[a] $z + x - y$ **[b]** $\frac{z - y}{x}$

.....

(23) Three times of a natural number x is 8 more than the multiplicative neutral , express this information in an equation and solve it for x

.....

.....

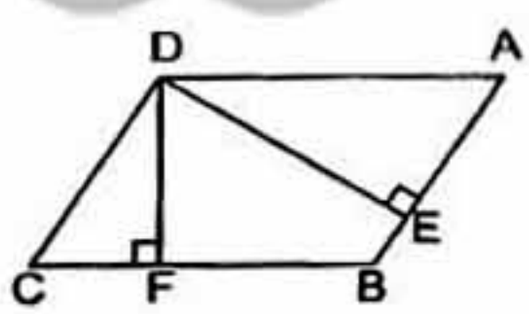
(24) Use the commutative and the associative properties to find the result of :

[a] $4 \times 175 \times 25$ **[b]** $102 + 175 + 98$

.....

.....

(25) In the opposite figure :



ABCD is parallelogram in which AB = 10 cm. ,

DE = 12 cm. and DF = 8 cm. Find :

[a] The area of the parallelogram ABCD

[b] The length of $\overline{BC}$

.....

.....

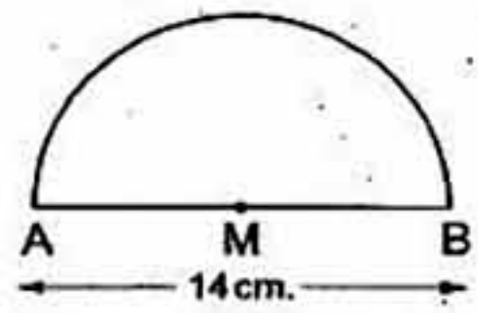
(26) Use the distribution property in ℕ to find : 215×101

.....

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Final Examinations

(27) Calculate the perimeter of the opposite figure where AB = 14 cm. $(\pi = \frac{22}{7})$



.....

(28) If $X = \{x : x \in \mathbb{N} , 1 \leq x < 5\}$, $Y = \{4 , 5 , 6\}$

Find : **[a]** $X \cap Y$ **[b]** $X \cup Y$ **[c]** $X - Y$

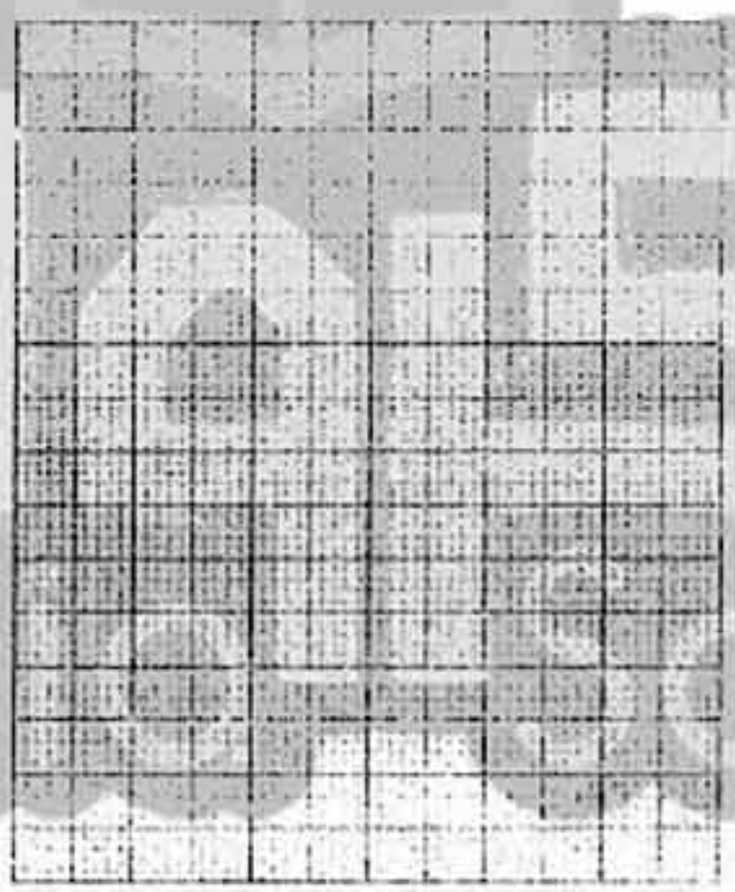
.....

(29) Solve the equation : $x + 3 = 12$ where $x \in \mathbb{N}$

.....

(30) Represent the following data by a frequency polygon :

Sets	4 –	6 –	8 –	10 –	Total
Frequency	4	6	5	10	25



Model 8

Answer the following questions :

1 ***Choose the correct answer :***

(1) The area of the largest rectangle whose perimeter is 24 cm. = ... cm^2. (15 *or* 36 *or* 72 *or* 144)

(2) If y ÷ 10 = 50 , then y = ... (50 *or* 100 *or* 5 *or* 500)

(3) The square whose diagonal length = 8 cm. , its area = ... cm^2. (64 *or* 32 *or* 16 *or* 8)

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(4) $\frac{9-5}{3-3}$ = ... (zero *or* 3 *or* 4 *or* meaningless)

(5) If $X = \{x : x \in \mathbb{N} , x \leq 2\}$, then X = ...

($\{0 , 1\}$ *or* $\{1\}$ *or* $\{0 , 1 , 2\}$ *or* $\varnothing$)

(6) If $y = 3x + 5$, then the constant is (y *or* x *or* 3 *or* 5)

(7) If the side lengths of a triangle are equal in length , then the triangle is triangle. (scalene *or* isosceles *or* equilateral)

(8) Subtract 4 from the number a the symbolic expression is

($2a - 4$ *or* $a + 4$ *or* $a - 4$ *or* $2a + 4$)

(9) If $x + 7 = 9$, $x \in \mathbb{N}$, then x = ... (16 *or* 2 *or* 11 *or* 13)

(10) If the ordered pair (5 , 2) = (5 , y) , then y = ...

(2 *or* 3 *or* 4 *or* 5)

(11) If A (2 , 3) , B (2 , 7) , then the midpoint of $\overline{AB}$ is

((10 , 4) *or* (2 , 5) *or* (2 , 10) *or* (0 , 9))

(12) A circumference of a circle is 22 cm. , then its diameter length = ... cm. (Where $\pi = \frac{22}{7}$) (3.5 *or* 7 *or* 8 *or* 11)

(13) (5 – 9) $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(14) The shown transformation is called b|d

(reflection *or* rotation *or* translation)

2 *Complete each of the following :*

(15) A triangle whose area = 120 cm^2 , and its height = 10 cm. , then its base length = ... cm.

(16) The multiplicative neutral element in $\mathbb{N}$ is

(17) 47 × (36 + 64) = 47 × = ...

(18) If 5 + 0 = 0 + 5 = 5 , then it is called property.

(19) The set of even numbers – the set of odd numbers = ...

(20) The number of axes of symmetry of the rhombus is

3 *Answer the following :*

(21) Which is greater in area ?

A parallelogram of base 10 cm. and corresponding height 6 cm. or a rhombus of diagonals lengths 12 cm. and 16 cm.

.....

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Final Examinations

(22) Solve the following equation : $5x - 7 = 33$, $x \in \mathbb{N}$

.....

(23) The length of the diameter of the wheel of a bicycle is 56 cm. Calculate the covered distance if the wheel turns one turn and what is the number of turns to cover distance of 352 metres ?

(Where $\pi = \frac{22}{7}$)

.....

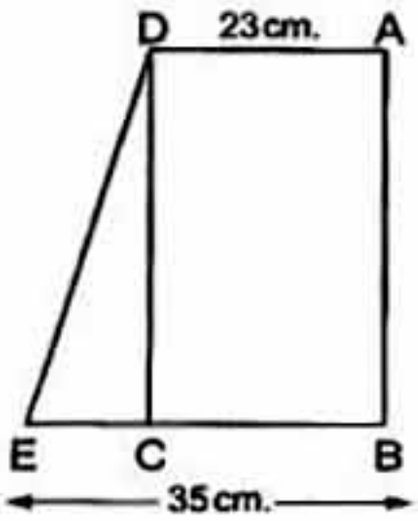
.....

(24) In the opposite figure :

ABCD is a rectangle of area 828 cm^2.

$E \in \overleftarrow{BC}$, AD = 23 cm. and BE = 35 cm.

Find the area of Δ DCE



.....

(25) An employee spends his salary as follows :

$\frac{1}{8}$ of it to clothes , $\frac{1}{2}$ of it to food

, $\frac{1}{4}$ of it to medicine and $\frac{1}{8}$ of it to renting.

If his salary was L.E. 1 600

, then find the spending of food.



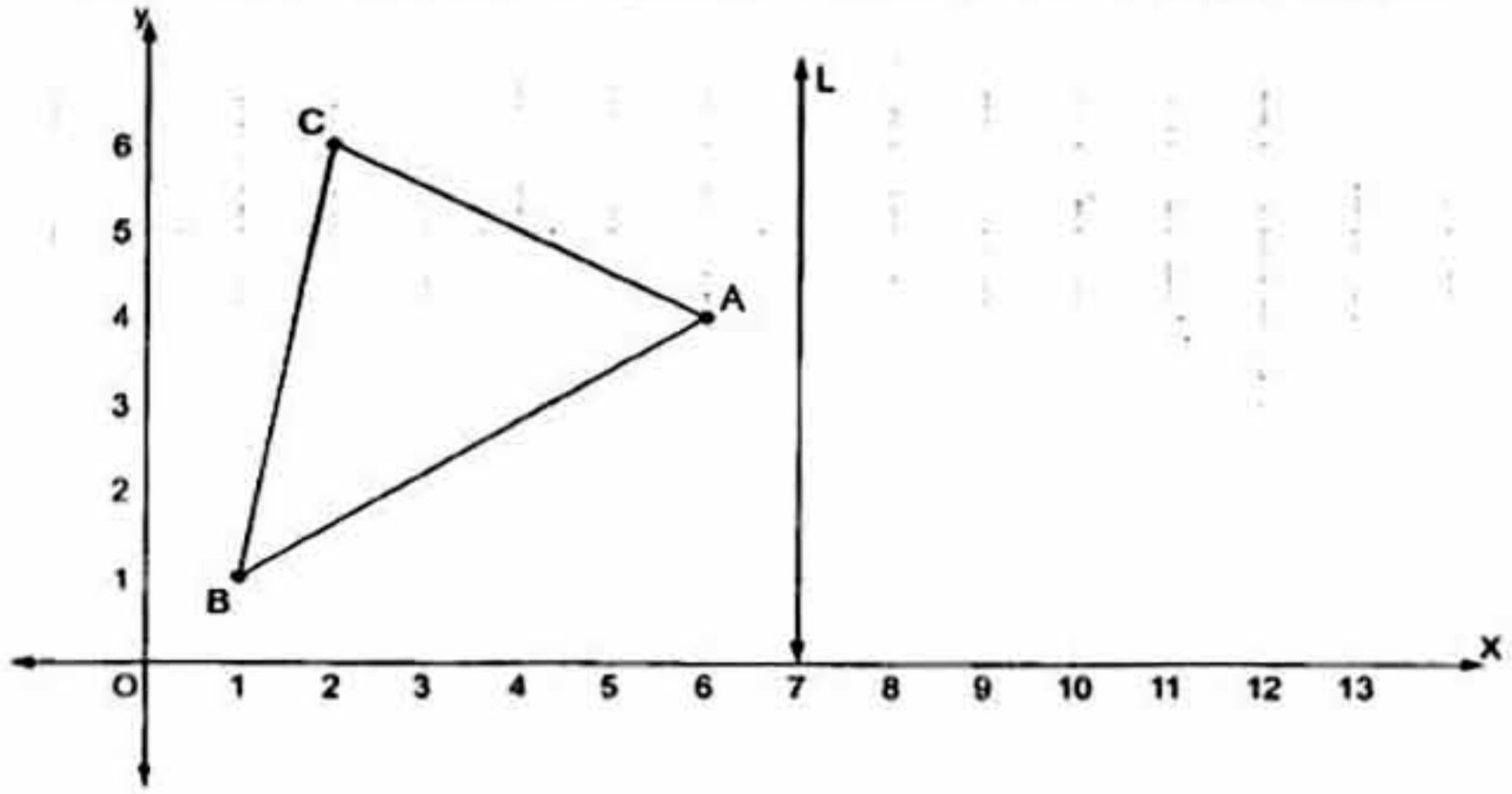
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(26) In the cartesian coordinates plane , from the following figure :

[a] Complete :

A (..... , ...) , B (..... , ...) and C (..... , ...)

[b] If L is the axis of reflection of the Δ ABC , draw Δ $\grave{A}\grave{B}\grave{C}$ the image of Δ ABC by reflection in the straight line L



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(27) Using the properties of commutation , distribution and association in $\mathbb{N}$, find the value of each of the following :

[a] $137 \times 36 - 37 \times 36$ **[b]** $28 + 59 + 72 + 41$

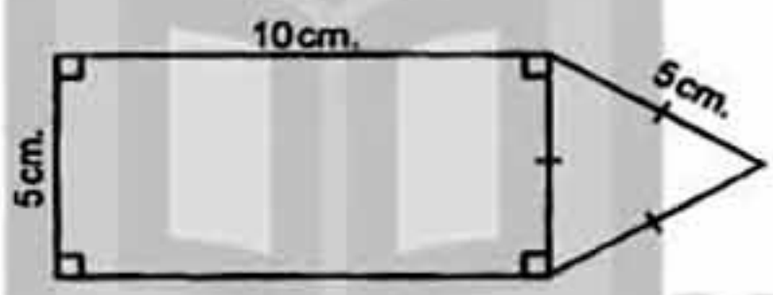
[c] $8 \times 81 \times 125$

.....

.....

.....

(28) Find the perimeter of the opposite figure :



.....

(29) Use the distribution property to find the value of : 519×99

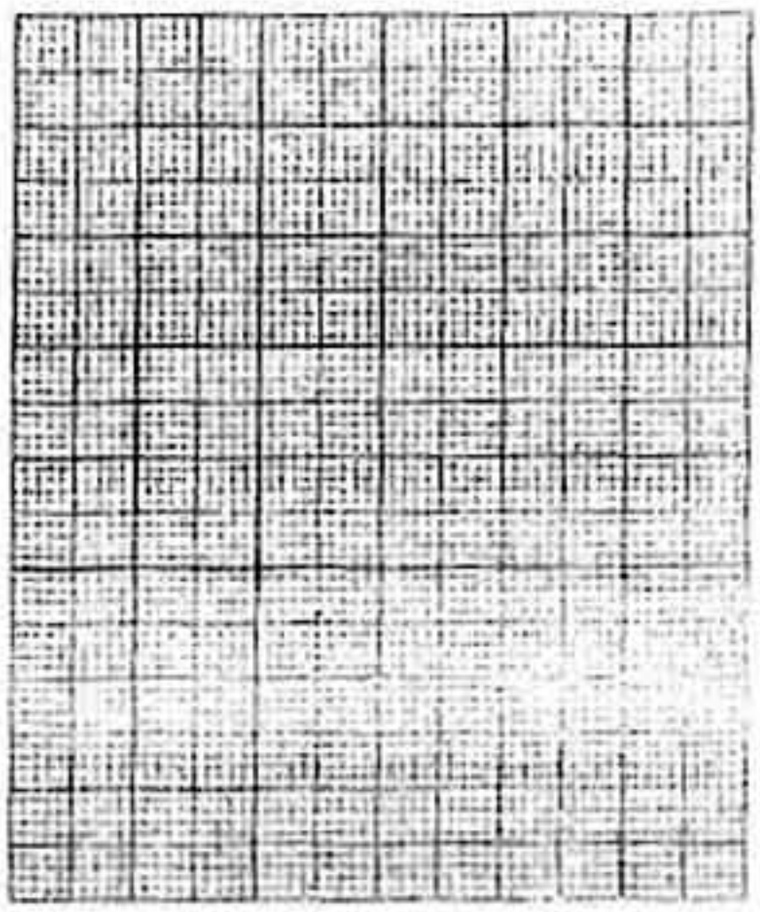
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(30) The following table shows the marks of 40 pupils in English exam :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	6	k	14	12	40

[a] Find the value of k

[b] Represent these data by the frequency polygon.



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Final Examinations

Model 9

Answer the following questions :

1 ***Choose the correct answer :***

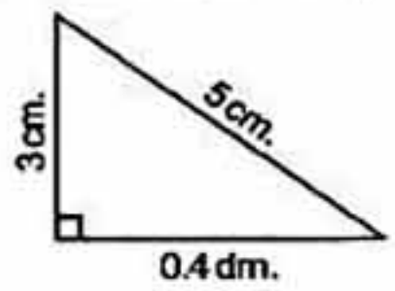
(1) If we multiply the number x by 7 , then we subtract from the result 4 , we shall get

($7x-4$ *or* $4x+7$ *or* $7x-3$ *or* $3-7x$)

(2) There are axes of symmetry of an equilateral triangle.

(0 *or* 1 *or* 2 *or* 3)

(3) Area of the opposite triangle is cm^2.



(12 *or* 24 *or* 43 *or* 6)

(4) If x is an odd number , then $x+2$ is

(even *or* odd *or* prime *or* otherwise)

(5) $\{5, 6, 7\}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(6) If $3x = 15$, $x \in \mathbb{N}$, then $x-1$ = ... (5 *or* 4 *or* 3 *or* 2)

(7) The area of square whose diagonal length is 8 cm. is cm^2.

(10 *or* 16 *or* 32 *or* 64)

(8) If $X = \{x : x \in \mathbb{N} , 5 \leq x < 7\}$, then X = ...

($\{5\}$ *or* $\{6\}$ *or* $\{5, 6\}$ *or* $\{5, 6, 7\}$)

(9) If the sum of two numbers x and y is 20 , then y = ...

($x-20$ *or* $20-x$ *or* $x+20$ *or* $\frac{x}{20}$)

(10) If the lengest chord in a circle is 7 cm. , then the circumference of the circle is cm. $\left(\text{where } \pi = \frac{22}{7}\right)$

(3.7 *or* 7 *or* 22 *or* 44)

(11) A parallelogram in which the lengths of two adjacent sides are 5 cm. and 7 cm. , then length of the smaller height = 4 cm. , then its area = ... cm^2.

(20 *or* 10 *or* 28 *or* 14)

(12) If A (3 , 1) , B (3 , 9) , then the midpoint of $\overline{AB}$ is

((6 , 10) *or* (3 , 10) *or* (3 , 5) *or* (0 , 10))

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(13) The perimeter of the equilateral triangle whose side length L cm.

is cm. (L + 3 *or* $\frac{1}{3}$ L *or* L – 3 *or* 3 L)

(14) The set of odd numbers the set of natural numbers.

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

2 *Complete each of the following :*

(15) If A × 60 + A × 4 = 3 × 64 , then A = ...

(16) 2 , 7 , 12 , 17 , ... , ... (in the same pattern)

(17) The additive neutral element in $\mathbb{N}$ is

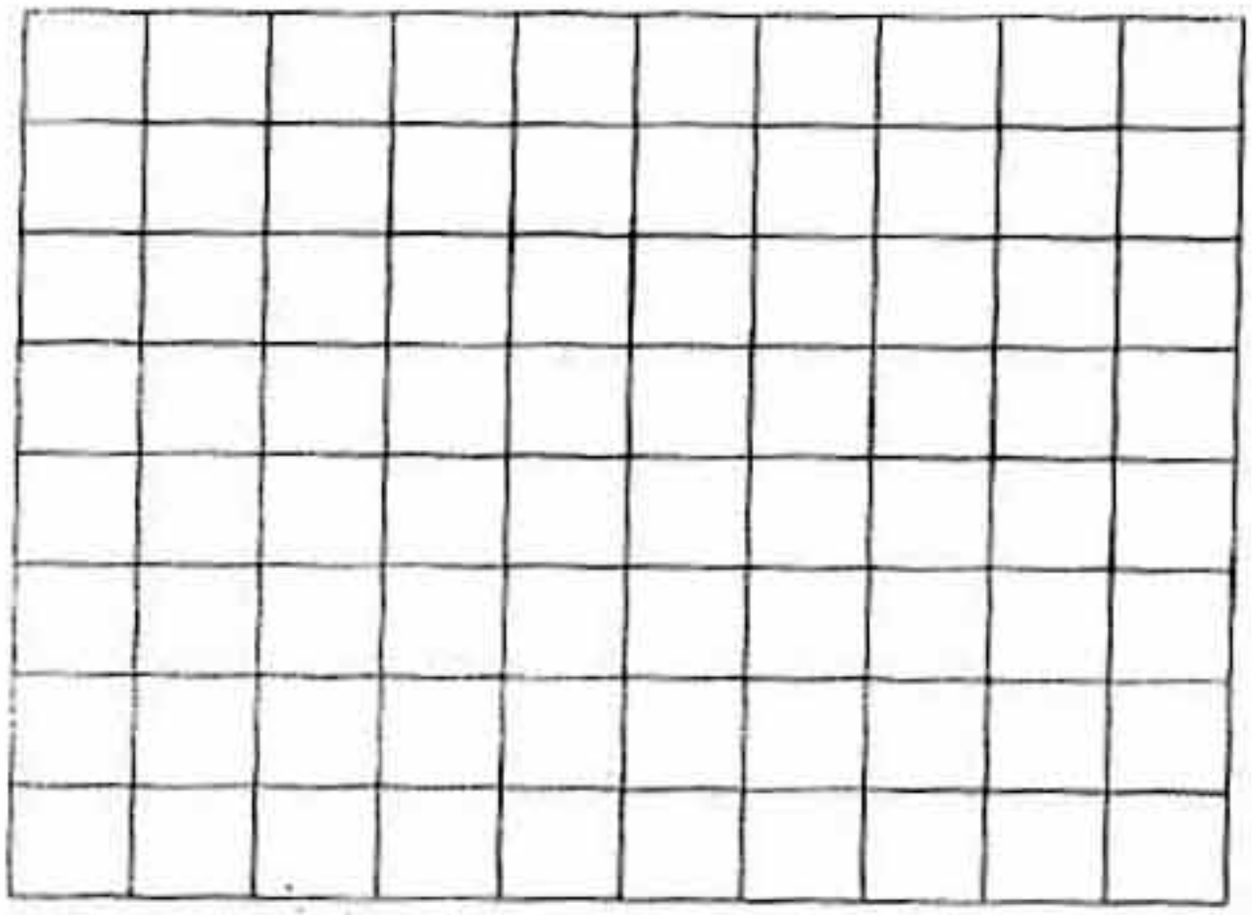
(18) The perimeter of square whose side length is 10 cm. = ... cm.

(19) Area of the triangle = $\frac{1}{2}$ the length of its base ×

(20) For any natural numbers x , y and z where $(x \times y) \times z = x \times (y \times z)$ is called property.

3 *Answer the following :*

(21) In a 2-dimensional coordinate plane : Draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the triangle ABC by reflection across $\overleftrightarrow{BC}$



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Final Examinations

(22) Five even natural numbers , the greatest number is $x + 13$, write down these numbers.

.....

(23) The area of a rectangle equals the area of a square whose diagonal length is 12 cm. , find the perimeter of the rectangle if its width equals 8 cm.

.....

.....

(24) Solve each of the following equations in $\mathbb{N}$:

[a] $\frac{1}{6}x - 3 = 2$ **[b]** $3x + 7 = 19$

.....

.....

(25) Find the area of rhombus whose diagonals lengths 20 cm. and 10 cm.

.....

(26) Calculate using commutative , associative and distributive properties :

[a] 642 + 171 + 358 + 29 **[b]** 25 × 304

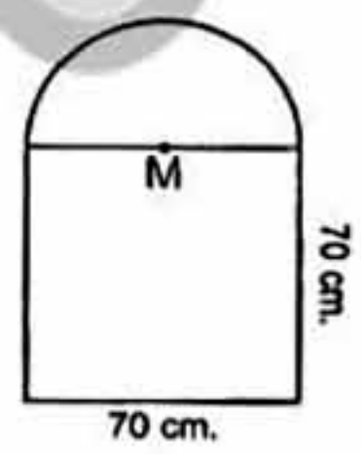
.....

.....

(27) If the number x exceeds twice the number y by 7 , write down the mathematical relation which relates x by y

.....

(28) In the opposite figure , there is a window which has the form of square whose side length is 70 cm. and above it there is a semicircle. Calculate the perimeter of the window. $\left(\text{where } \pi = \frac{22}{7}\right)$



.....

(29) Use distributive property to find the result of : 18 × 99

.....

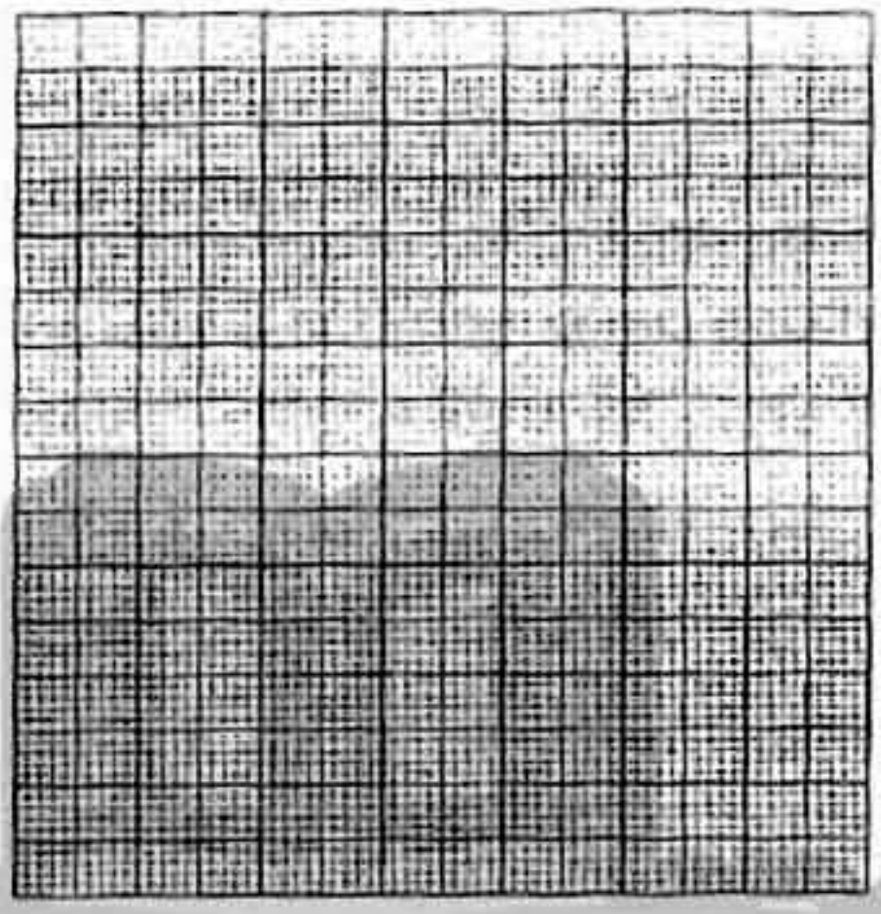
(30) The following table shows the marks of 40 pupils in an exam :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	A	7	40

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[a] Find the value of A

[b] Draw the histogram and the frequency polygon which represent these data.



Model 10

Answer the following questions :

1 ***Choose the correct answer :***

(1) The diameter length of the circle whose circumference is 88 cm. equals cm. (28 *or* 14 *or* 21 *or* 7)

(2) If $x + 8 = 15$, $x \in \mathbb{N}$, then x = ... (3 *or* 7 *or* 6 *or* 5)

(3) Add 5 to double number a is written as

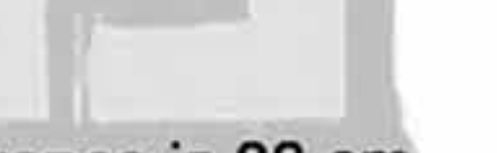
($5a + 2$ *or* $5 + a$ *or* $2a + 5$ *or* $2a - 5$)

(4) The area of the rhombus whose side length is 8 cm. and its height is 4 cm. equals cm^2 (12 *or* 16 *or* 32 *or* 64)

(5) $75 \times 99 = 75 \times (100 -$) (100 *or* 75 *or* 1 *or* 0)

(6) The smallest natural number is ($\frac{1}{7}$ *or* 0 *or* 1 *or* $\frac{1}{2}$)

(7) The opposite geometric transformation is



(reflection *or* rotation *or* translation)

(8) The square has lines of symmetry.

(1 *or* 2 *or* 4 *or* infinite)

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Final Examinations

(9) If 7 y = 84 , then $\frac{1}{2}$ y = ... (6 *or* 12 *or* 21 *or* 42)

(10) If $\mathbb{N}$ is the set of natural numbers , a $\in \mathbb{N}$, b $\in \mathbb{N}$

, then a + b $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(11) The ordered pair (2 , 7) = (x , 7) , then x = ...

(5 *or* 4 *or* 7 *or* 2)

(12) The triangle whose base length is 5 cm. and the corresponding height of it is 8 cm. , its area = ... cm^2

(13 *or* 20 *or* 26 *or* 40)

(13) If the difference between two numbers a and b is 35 , a is the greater number , then b = ...

(35 – a *or* 35 + a *or* a – 35 *or* $\frac{a}{35}$)

(14) If X = $\{x : x \in \mathbb{N} , 2 \leq x \leq 3\}$, then X = ...

({2 , 3} *or* {2} *or* {3} *or* $\varnothing$)

2 ***Complete each of the following :***

(15) The square whose perimeter is 36 cm. , then its area = ... cm^2

(16) The next number in the pattern : 1 , 4 , 7 , 10 , ...

(17) 425 + 575 = 575 + ... (..... property)

(18) On the coordinate plane : M (5 , 1) , N (5 , 6) , then MN = ... length units.

(19) If x is an even number , then (x – 1) is an number.

(20) If 87 × 15 = 87 × x + 87 × 10 , then x = ...

3 ***Answer the following :***

(21) Use the properties of the operations to find :

[a] 872 + 199 + 128 + 801 [b] 56 × 1 001

.....

.....

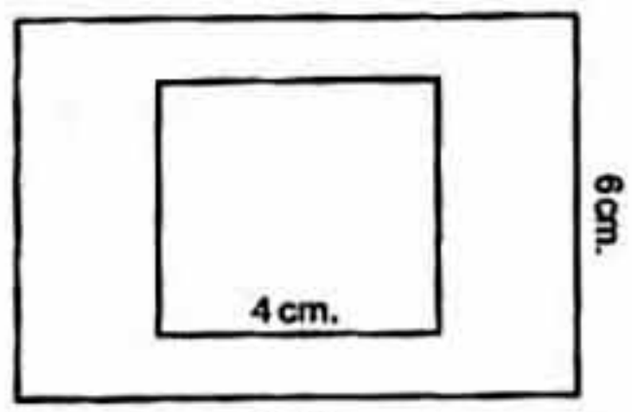
هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

(22) If the age of a man now is x years , find :

[a] The age of the man after 5 years

[b] The age of the man since 7 years

(23) Find the area of the shaded part where the outer shape is a rectangle and the inner shape is a square.



.....

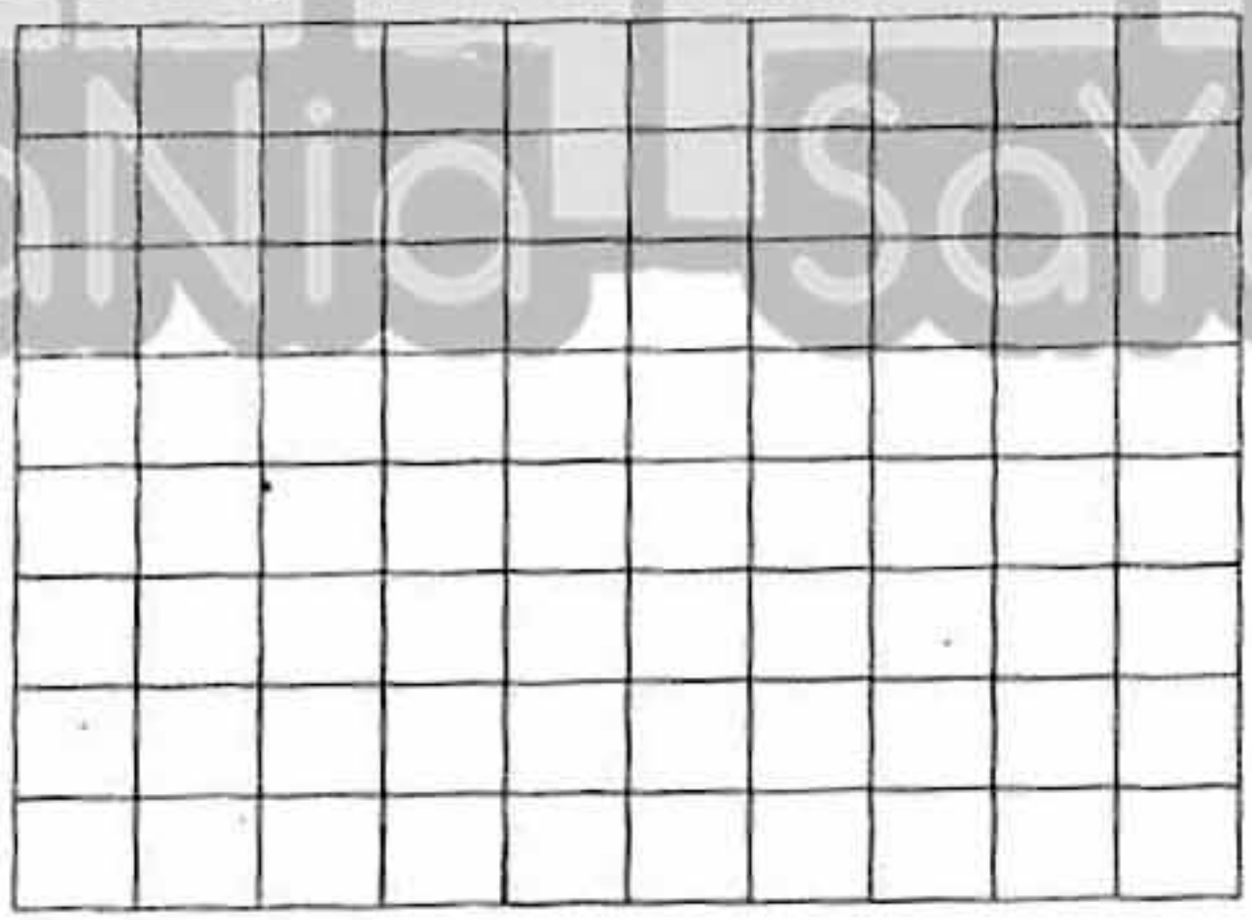
(24) Solve the equations :

[a] $2x - 3 = 11$, $x \in \mathbb{N}$ **[b]** $\frac{1}{2}x + 8 = 10$, $x \in \mathbb{N}$

.....

.....

(25) In a coordinate plane , locate the points A (5 , 0) , B (9 , 0) , C (9 , 4) and D (5 , 4) , name the shape ABCD , then draw the image of ABCD by reflection across $\overleftrightarrow{AD}$



(26) By using the properties of multiplication find the value of :

[a] $4 \times 31 \times 25$ **[b]** 5×99

.....

.....

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الصف الخامس الابتدائى
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كتاب المعاصر

Final Examinations

(27) If the height of a parallelogram is 8 cm. and the length of corresponding base is 10 cm. , calculate the area of the parallelogram.

.....

(28) If a = 5 , b = 2 and c = 3 , find the value of :

[a] a + c – b **[b]** $\frac{a-c}{b}$

.....

.....

.....

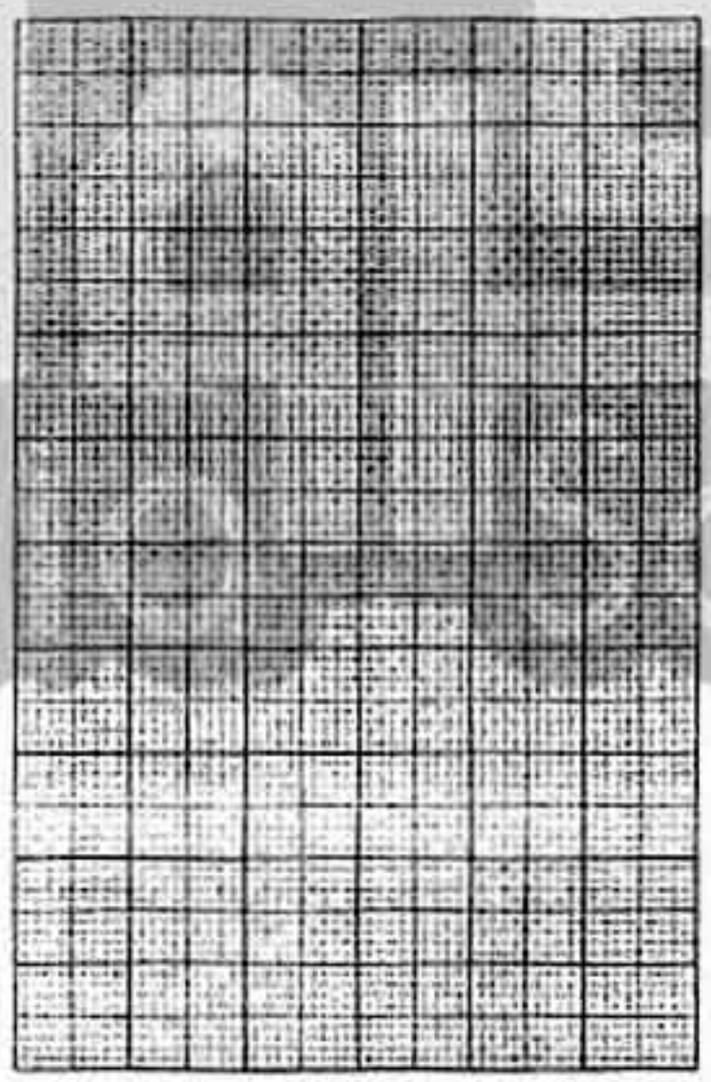
(29) Find the eighth term in the sequence : 1 , 3 , 6 , 10 , ...

.....

(30) The following table shows the marks of 50 pupils in exam of Arabic in one month :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

Draw a histogram which represents these data.



Model 11

Answer the following questions :

1 ***Choose the correct answer :***

(1) 5 is subtracted from twice the number x = ...

($5-x$ *or* $2x-5$ *or* $5x+2$ *or* $5-2x$)

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(2) The diameter length of a circle whose circumference is 88 cm.
= cm. (28 **or** 14 **or** 7 **or** 21)

(3) Youssef saved L.E. x and his father gave him L.E. 15 , then he has
L.E. ($x + 15$ **or** $15 - x$ **or** $x - 15$ **or** x)

(4) If the area of a square is 200 cm^2 , then the length of its diagonal is
..... cm. (16 **or** 18 **or** 15 **or** 20)

(5) If $x = 3$, $y = 5$, then $4x - 2y =$ (2 **or** 5 **or** 14 **or** 22)

(6) If $\mathbb{N}$ is the set of natural numbers, $a \in \mathbb{N}$, $b \in \mathbb{N}$
, then $a \times b$ $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

(7) $\frac{0}{7}$ $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

(8) The number of symmetry axes of an equilateral triangle = ...
(3 **or** 2 **or** 1 **or** 0)

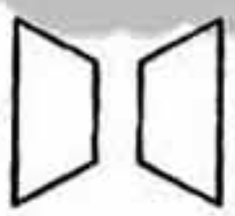
(9) If $6 \times 12 = 12 \times x$, then $x =$ (4 **or** 6 **or** 7 **or** 8)

(10) If the side length of a square is L , then its perimeter = ...
(L + 4 **or** L − 4 **or** 2 L **or** 4 L)

(11) $\{1 , 2 , 3\}$ O ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

(12) If $3x + 7 = 19$, $x \in \mathbb{N}$, then $x =$ (2 **or** 3 **or** 4 **or** 5)

(13) The area of a triangle whose base length 5 cm. and corresponding
height 6 cm. is cm^2 (30 **or** 15 **or** 25 **or** 36)

(14) The opposite geometric trans formation  is
(translation **or** rotation **or** reflection)

2 *Complete each of the following :*

(15) $\mathbb{N} - \{0\}$ = ...

(16) The radius length of the circle = $\frac{\text{.....}}{2\pi}$

(17) 32 + (59 + ...) = (32 + 68) + ...

(18) A rhombus its area is 50 cm^2 and the length of one of its diagonals
25 cm. , then the length of the other diagonal = ... cm.

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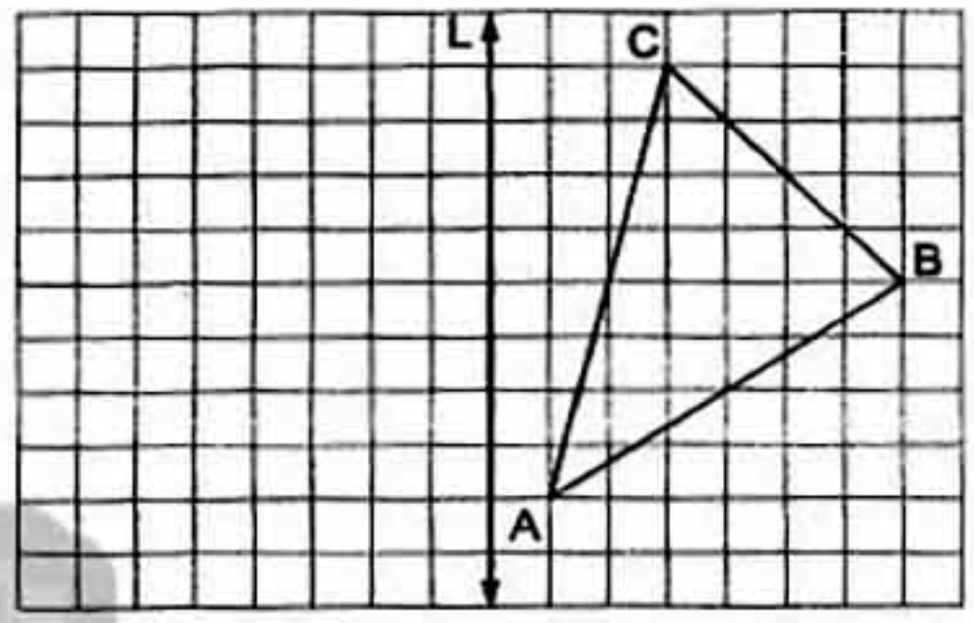
Final Examinations

(19) If b = 3 , then 2 b – 5 = ...

(20) If 654 = (x × 100) + 54 , then x = ...

3 ***Answer the following :***

(21) Draw the image of Δ ABC by reflection in the straight line L



(22) If the number x exceeds twice the number y by 9 , write the mathematical relation between x and y

.....

(23) A parallelogram of area 36 cm^2 and the length of its base is 4 cm. Find the corresponding height of its bare.

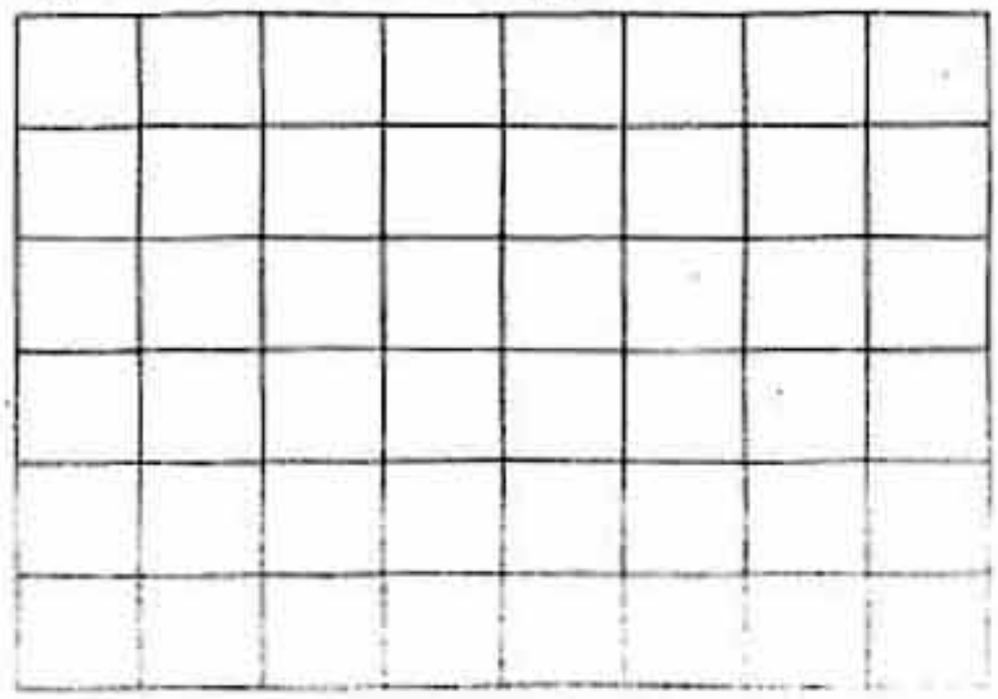
.....

(24) Solve the equations in ℕ :

[a] $x - 3 = 21$ [c] $3y = 27$

.....

(25) On a coordinate plane, draw the figure ABCD where A (1 , 1) , B (4 , 1) , C (4 , 3) , D (1 , 3) , then complete :



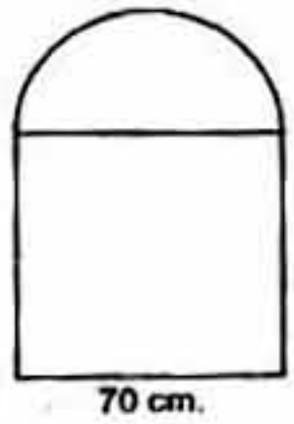
[a] The length of $\overline{AB}$ = ... units.

[b] The name of the figure ABCD is

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

(26) In the opposite figure :

There is a window which has the form of a square, whose side length is 70 cm. , and above it, there is a semicircle.



[a] Calculate the perimeter of the window.

[b] If the area of the semicircle is 3850 cm^2 , find the area of the window.

.....

(27) Use the properties of addition to find the result of the following :

$$82 + 75 + 18$$

.....

(28) Write in the list method the set : $X = \{x : x \in \mathbb{N} , 3 \leq x \leq 8\}$, then represent its elements on the number line.

.....

(29) Use the distribution property to find the result of :

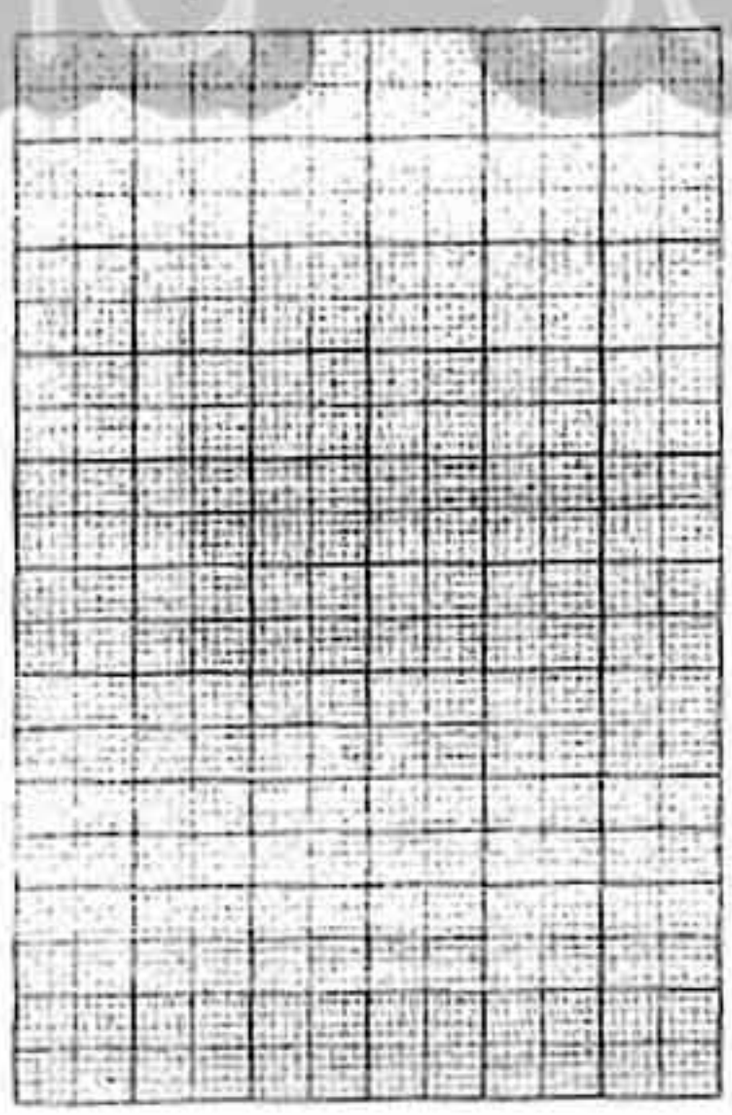
$$163 \times 45 - 63 \times 45$$

.....

(30) The following table shows the marks of 50 pupils in math test in one month :

Sets	10 –	20 –	30 –	40 –	Sum
Frequency	10	12	18	10	50

Represent these data by frequency polygon.



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Final Examinations

Model 12

Answer the following questions :

1 ***Choose the correct answer :***

(1) The diameter of circle = ... **(r *or* 2r *or* 3r *or* 4r)**

(2) If $x + 8 = 18$, then $x - 1$ = ... **(11 *or* 10 *or* 9 *or* 8)**

(3) If the diagonals lengths of a rhombus are 10 cm. and 12 cm. , then its area = ... cm^2. **(120 *or* 60 *or* 24 *or* 32)**

(4) $\{3 , \frac{15}{4}\}$ $\mathbb{N}$ **($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)**

(5) If we subtract 5 from a , we get

(5 a *or* 5 – a *or* a – 5 *or* a + 5)

(6) If A (2 , 4) , B (2 , 6) , then the midpoint of $\overline{AB}$ is

((10 , 4) *or* (2 , 5) *or* (2 , 10) *or* (0 , 9))

(7) The square has axes of symmetry. **(0 *or* 2 *or* 3 *or* 4)**

(8) The area of a triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2. **(3 *or* 11 *or* 15 *or* 60)**

(9) If the sum of two numbers x and y is 25, then y = ...

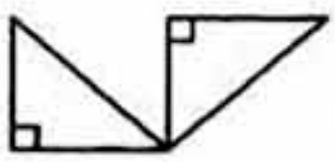
($x - 25$ *or* $25 - x$ *or* $x + 25$ *or* $\frac{x}{25}$)

(10) If O is the set of odd numbers, then O $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(11) A square whose diagonal length is 12 cm. , its area = ... cm^2.

(144 *or* 84 *or* 72 *or* 60)

(12) The geometric transformation  is

(translation *or* rotation *or* reflection)

(13) If the circumference of a circle is 314 cm. , then its radius length = ... cm. where $\pi = 3.14$ **(100 *or* 75 *or* 50 *or* 25)**

(14) If $7 \times 95 = x \times (75 + 20)$, then x = ...

(5 *or* 95 *or* 7 *or* 9)

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2 ***Complete each of the following :***

(15) If the age of a man now is x years, then his age after 5 years = ...

(16) If the long base of parallelogram is 8 cm. , short base 5 cm. and its short height is 4 cm. , then its area = ... cm^2

(17) 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

(18) The property used in : $a \times (b \times c) = (a \times b) \times c$ is

(19) The additive neutral element in $\mathbb{N}$ is

(20) The set $\{a : a \in \mathbb{N} , a < 4\}$ in the listing method = ...

3 ***Answer the following :***

(21) Use the commutalive and the associative properties to simplify finding the result of :

[a] 98 + 175 + 102 **[b]** $5 \times 312 \times 20$

.....

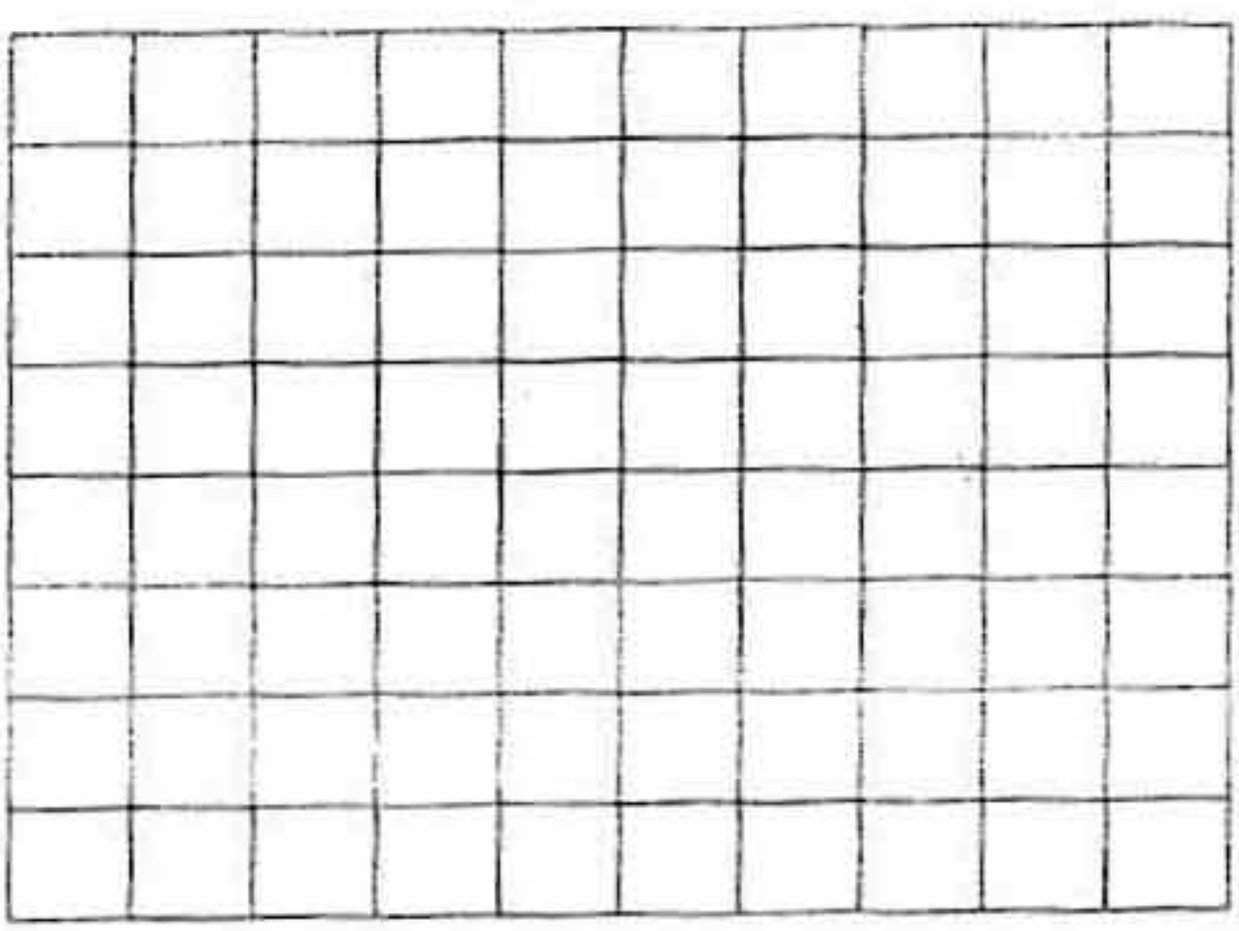
.....

(22) In the orthogonal cartesian coordinates , locate the points A (8 , 2) , B (3 , 2) , C (3 , 6) , D (8 , 6) , then complete :

[a] The length of $\overline{AB}$ = ... units, the length of $\overline{BC}$ = ... units.

[b] The figure ABCD is

[c] The perimeter of the figure ABCD = ... units.



هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Final Examinations

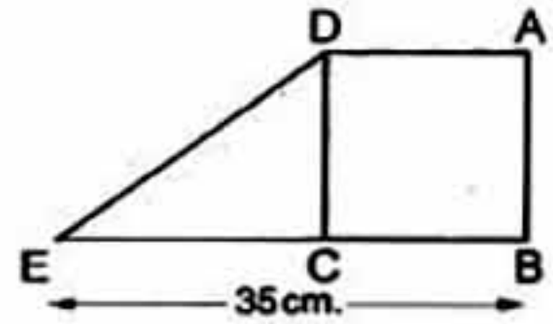
(23) Solve in $\mathbb{N}$ the equations : **[a]** $3x + 8 = 29$ **[b]** $\frac{1}{3}x + 8 = 10$

.....

(24) In the opposite figure :

ABCD is a square , its perimeter is 60 cm. , $E \in \overrightarrow{BC}$ and BE = 35 cm.

Find the area of the figure ABED



.....

.....

(25) Shady saved 14 pounds , he bought 3 notebocks of x pounds for each. The remainder with him was 8 pounds , express these situation by an equation.

.....

(26) Use the distribution property in $\mathbb{N}$ to find :

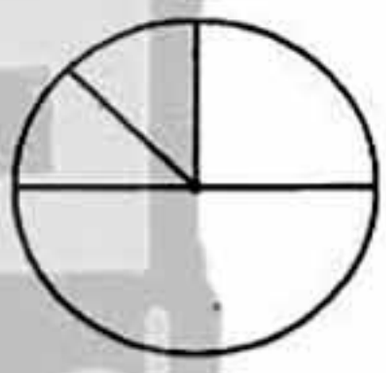
[a] 111×98 **[b]** 315×101

.....

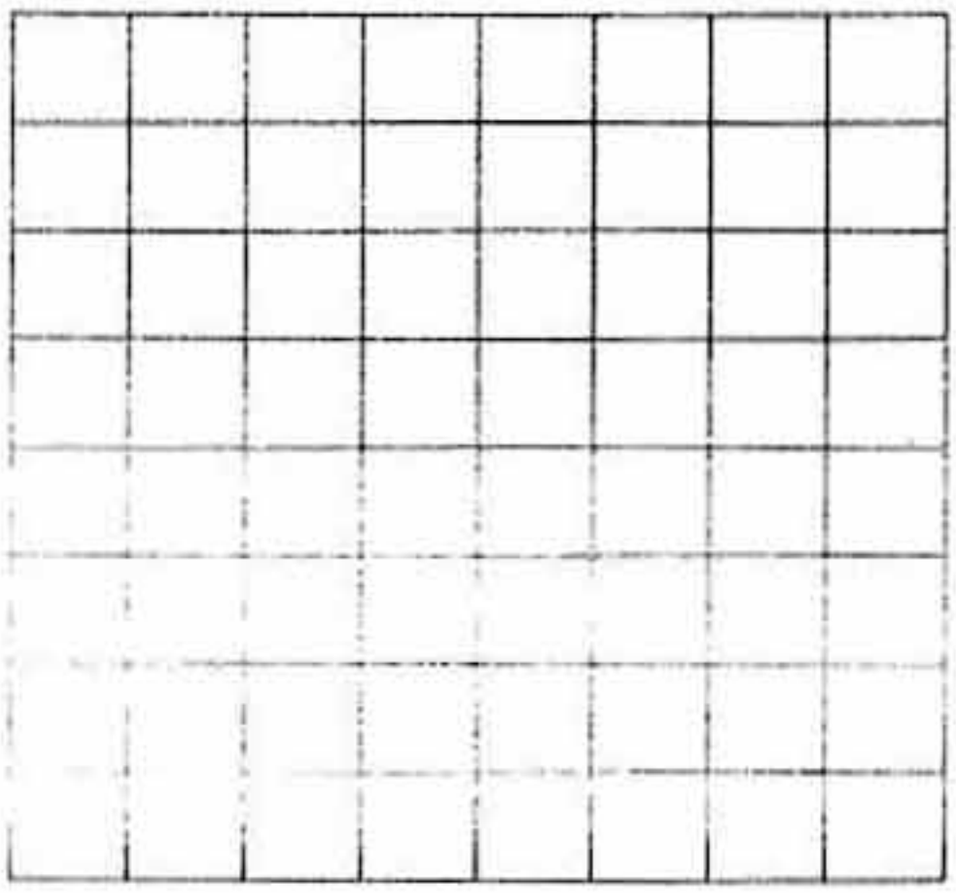
.....

(27) An employes spends his monthy salary as follows : 1000 pounds for food, 500 pounds for clothes, 250 pounds for the rent of the flat and 250 pounds for other spending.

Represent there data on the shown circular sectors.

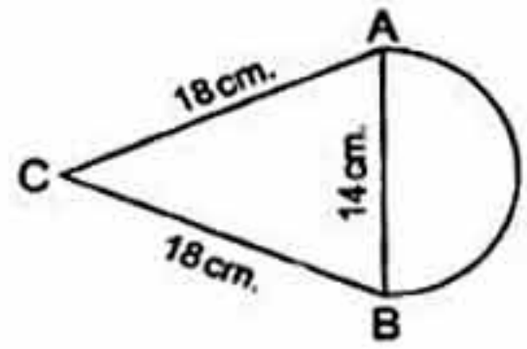


(28) On the coordinate plane, draw Δ ABC where A (3 , 5) , B (6 , 5) , C (3 , 2) , then draw the image of Δ ABC by reflection across $\overleftrightarrow{AC}$



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(29) Calculate the perimeter of the opposite figure where $\overline{AB}$ is the diameter of the circle and AB = 14 cm. $\left(\text{Consider } \pi = \frac{22}{7}\right)$

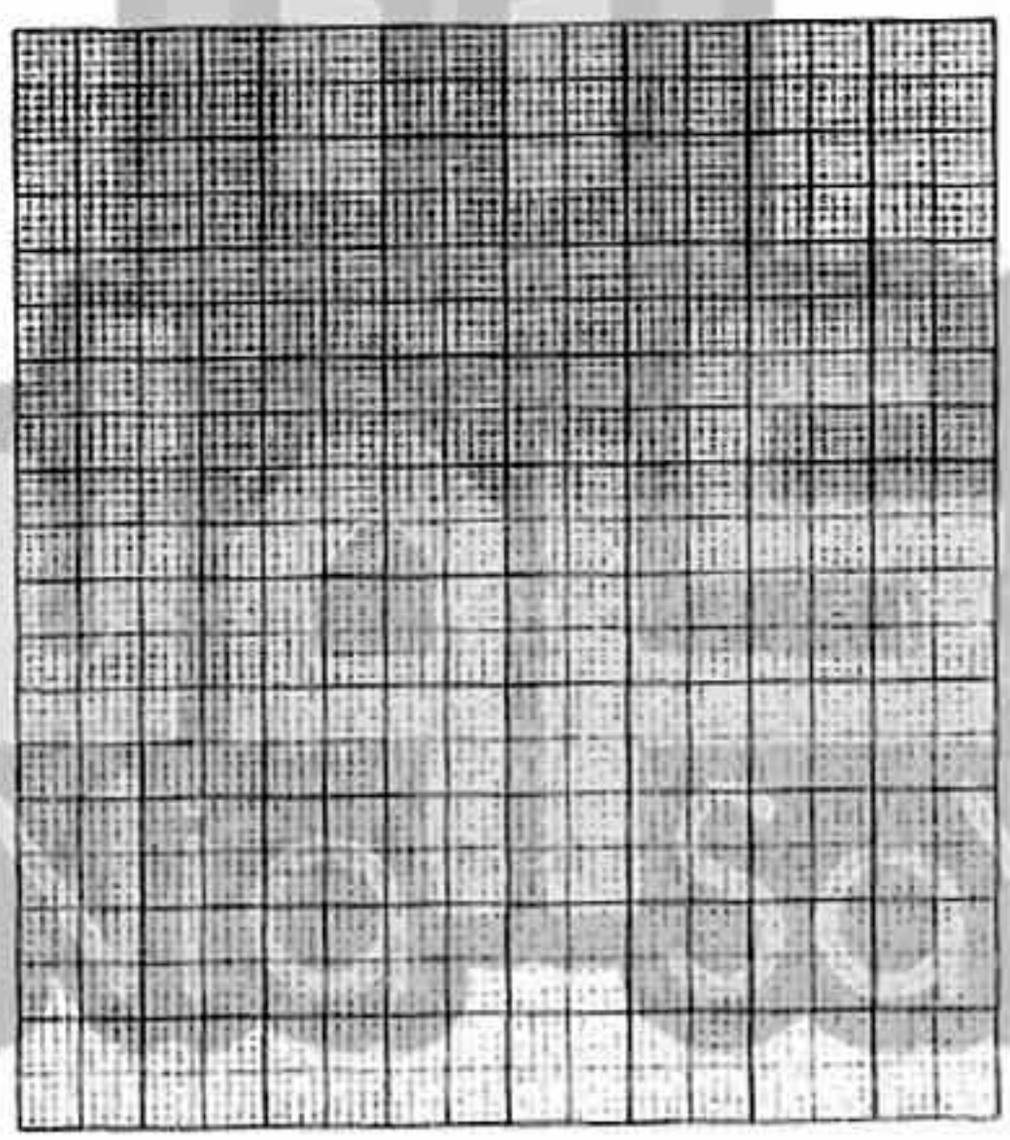


.....

(30) The following table shows the daily wages of workers in a company :

Sets	20 –	30 –	40 –	50 –	60 –	Total
Frequency	8	10	16	12	4	50

Draw the histogram and frequency polygon which represent these data.



Model 13

Answer the following questions :

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1 ***Choose the correct answer :***

(1) If the area of a rhombus equals 24 cm^2 and the length of one of its diagonals is 8 cm. , then the length of the other diagonal = ... cm.

(3 *or* 6 *or* 8 *or* 12)

(2) The next term in the pattern : 5 , 25 , 45 , ... is

(15 *or* 35 *or* 50 *or* 65)

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Final Examinations

(3) The number of axes of symmetry of scalene triangle is

(0 *or* 1 *or* 2 *or* 3)

(4) The multiplicative identity element in $\mathbb{N}$ is

(0 *or* 1 *or* 2 *or* 3)

(5) If $X = \{x : x \in \mathbb{N} , 0 < x < 1\}$, then X = ...

($\varnothing$ *or* $\{0 , 1\}$ *or* $\{0\}$ *or* $\{1\}$)

(6) If $2a + 7 = 15$, $a \in \mathbb{N}$, then a = ... (22 *or* 11 *or* 8 *or* 4)

(7) If x is an odd number , then $x + 2$ is number.

(odd *or* even *or* prime)

(8) $(4 \times$ $) \times 78 = 7800$ (5 *or* 25 *or* 50 *or* 125)

(9) c a  where a , c are two natural numbers.

(> *or* < *or* = *or* ≤)

(10) Adding 8 to double x , the symbolic expression is

($2x + 8$ *or* $8 - 2x$ *or* $x + 8$ *or* $8 + 3x$)

(11) The circumference of a circle whose diameter is 14 cm.
equals cm. $\left(\pi = \frac{22}{7}\right)$ (100 *or* 88 *or* 44 *or* 22)

(12) The least prime number × any prime number = ... number.

(odd *or* even *or* prime *or* otherwise)

(13) If the ordered pair (3 , 4) = (3 , y) , then y = ...

(2 *or* 3 *or* 4 *or* 5)

(14) $\frac{5}{7}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

2 ***Complete each of the following :***

(15) $91 \times (73 + 27) = 91 \times$ = ...

(16) Area of square = $\frac{1}{2} \times$ ×

(17) Circumference of the circle ÷ diameter length = ...

(18) The perimeter of an equilateral triangle whose side length is L cm. = ... cm.

(19) The length of the base of the triangle is 8 cm. and its height is 5 cm. , then its area = ... cm^2

(20) The square whose diagonal length is 8 cm. , its area = ... cm^2

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كتاب المعاصر موقع ذاكرولى التعليمى الصف الخامس الابتدائى

3 ***Answer the following :***

(21) Which is greater in area ? a rhombus in which the lengths of its diagonals are 8 cm. and 6 cm. or the parallelogram in which the length of its base is 10 cm. and the corresponding height is 5 cm. , then calculate the difference between them.

.....

.....

.....

(22) Solve the following equations in $\mathbb{N}$:

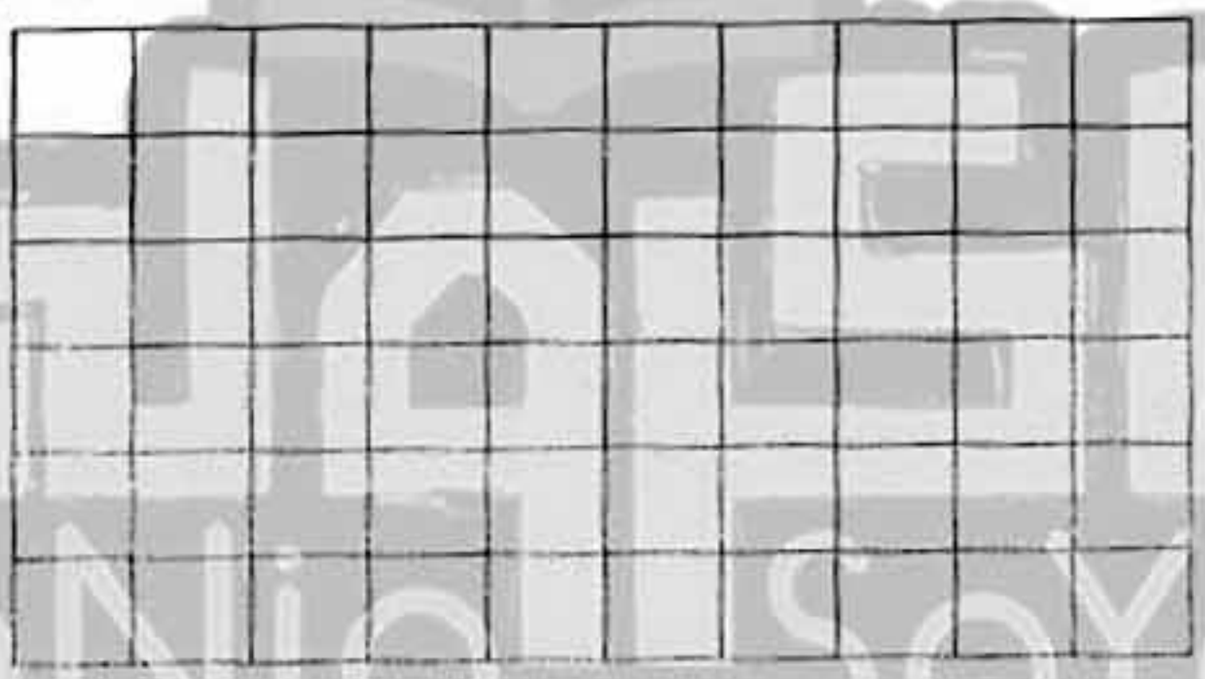
[a] $x + 3 = 12$ **[b]** $2x - 7 = 5$

.....

.....

.....

(23) On the coordinate plane draw Δ ABC where A (2 , 1) , B (5 , 1) , C (5 , 5) , then draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$



(24) If $X = \{x : x \in \mathbb{N} , 1 < x \leq 6\}$, $Y = \{5 , 6 , 7\}$, find :

[a] $X \cap Y$ **[b]** $X \cup Y$ **[c]** $X - Y$

.....

(25) Calculate using commutative , associative and distributive properties :

[a] 25×304 **[b]** $642 + 171 + 358 + 29$

.....

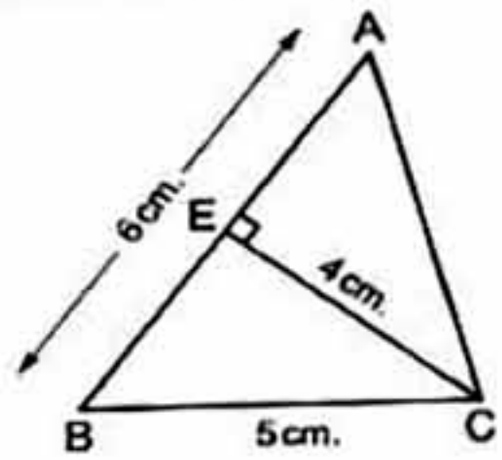
.....

(26) In the opposite figure :

ABC is a triangle , $\overline{CE} \perp \overline{AB}$

, if AB = 6 cm. , BC = 5 cm. and CE = 4 cm.

Find the area of Δ ABC



.....

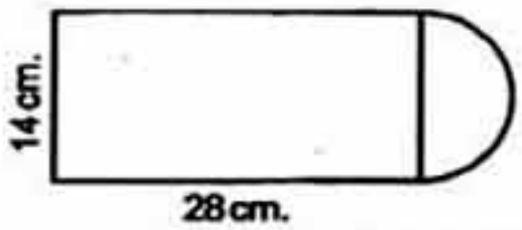
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Final Examinations

(27) If the diameter length of a bicycle's wheel is 66 cm. , what is the covered distance if the wheel turns 1000 rounds ? (Where $\pi = 3.14$)

.....

(28) Calculate the perimeter of the following figure $\left(\text{where } \pi = \frac{22}{7}\right)$



.....

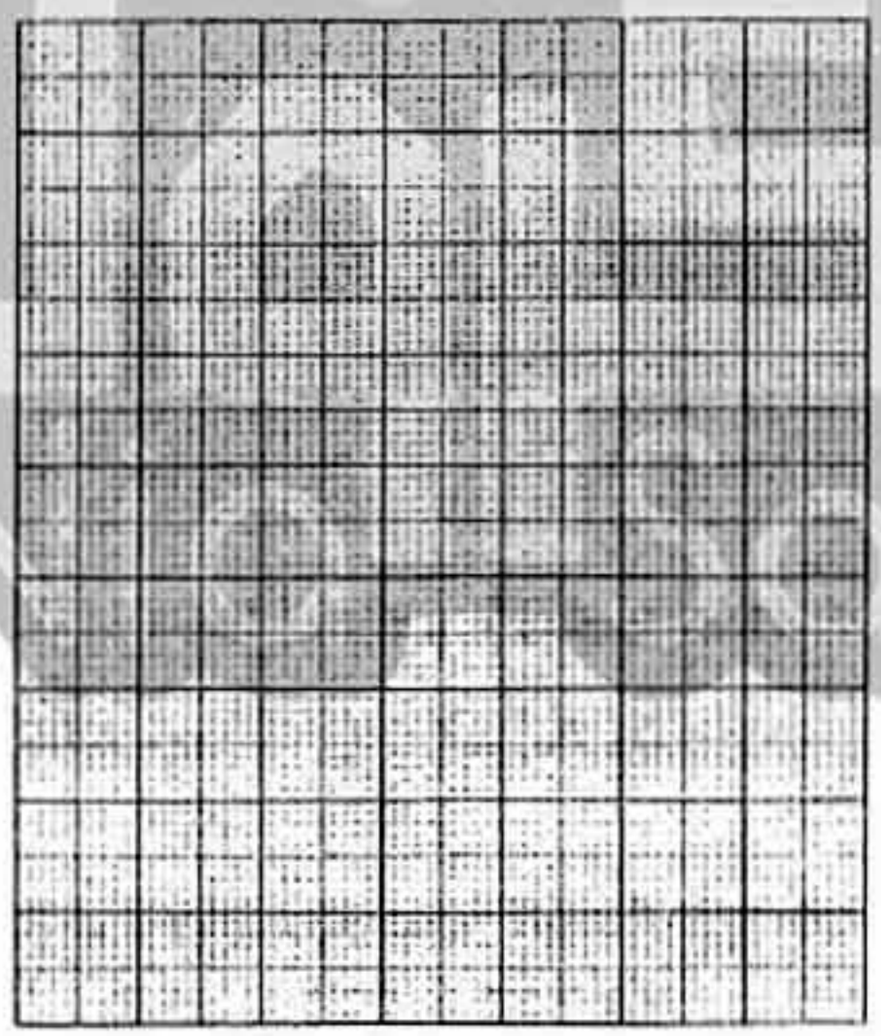
(29) Find the number which if added to 3 , the sum will be 9

.....

(30) The following table shows the frequency distribution of the number of work hours of 50 workers :

Sets	2 –	4 –	6 –	8 –	10 –	Total
Frequency	8	9	15	16	2	50

Graph these data using the frequency polygon :



Model 14

Answer the following questions :

1 ***Choose the correct answer :***

(1) The set of even numbers (E) ∩ the set of prime numbers (P) = ...

(P *or* {0} *or* ℕ *or* {2})

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(2) The difference between two numbers is 5 , the smaller one is y , then the greater number is

(5 y *or* 5 – y *or* y – 5 *or* y + 5)

(3) The number of axes of symmetry of the rhombus = ...

(1 *or* 2 *or* 3 *or* 4)

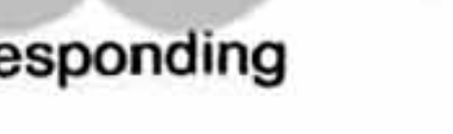
(4) If y ÷ 5 = 20 , then y = ... (4 *or* 15 *or* 25 *or* 100)

(5) If we multiply the number a by 9 , then we subtract 4 from the result , we get (9 a + 4 *or* 4 a + 9 *or* 9 a – 4 *or* a – 36)

(6) $\{2 , \frac{1}{2}\}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(7) The circumference of a circle whose diameter is 21 cm. equals cm. $\left(\pi = \frac{22}{7}\right)$ (22 *or* 44 *or* 66 *or* 88)

(8) The shaded triangle is an image of other triangle by



(reflection *or* translation *or* rotation)

(9) A rhombus in which the lengths of its diagonals are 10 cm. and 12 cm. , its area = ... cm^2 (120 *or* 60 *or* 24 *or* 32)

(10) The square whose perimeter is 16 cm. , its area = ... cm^2

(4 *or* 7 *or* 8 *or* 16)

(11) 5 × (2 + 10) = ... (50 *or* 60 *or* 75 *or* 100)

(12) 1 , 4 , 7 , 10 , ... (in the same pattern)

(15 *or* 20 *or* 13 *or* 17)

(13) The triangle whose base length is 5 cm. and the corresponding height of it is 8 cm. , its area = ... cm^2

(40 *or* 26 *or* 20 *or* 13)

(14) The ordered pair (3 , 4) = (x , 4) , then x = ...

(2 *or* 3 *or* 4 *or* 7)

2 *Complete each of the following :*

(15) 15 × 5 + 15 × 7 = 15 (..... + ...)

(16) If 7 + 0 = 0 + 7 = 7 , then the used property is called

(17) The symmetry axis divides the figure into two halves.

(18) The multiplicative neutral element in $\mathbb{N}$ is

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(19) The square whose area is 18 cm^2 , then its diagonal length is cm.

(20) If $X = \{x : x \in \mathbb{N} , x < 3\}$, then X = ...

3 ***Answer the following :***

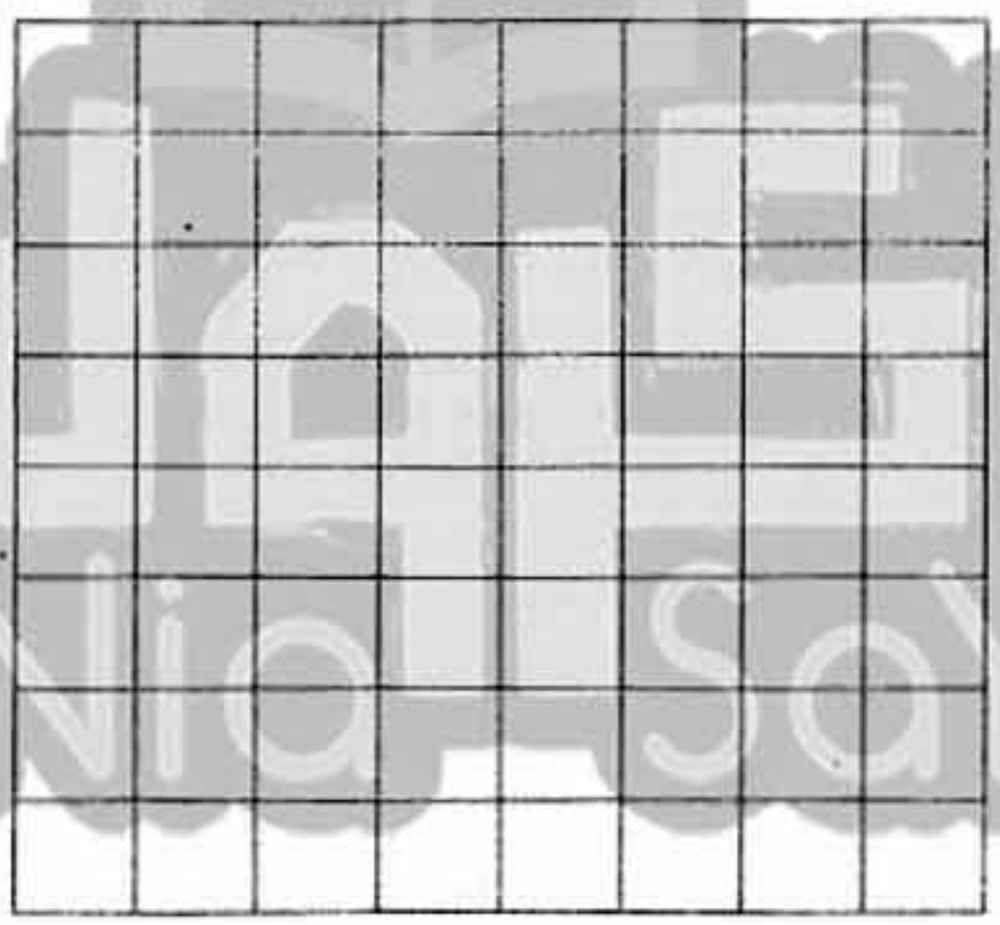
(21) Use the properties to find :

[a] 73×1001 [b] $872 + 199 + 128 + 801$

.....

.....

(22) In the coordinate plane draw the triangle ABC where A (2 , 4) , B (4 , 2) , C (4 , 7) , then draw the image of the triangle ABC by reflection across $\overleftrightarrow{BC}$



(23) Solve the equations in $\mathbb{N}$:

[a] $2x + 9 = 21$ [b] $5 - y = 3$

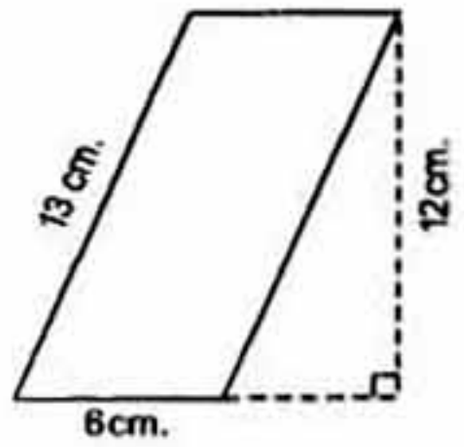
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(24) Find the area of the opposite parallelogram :

.....



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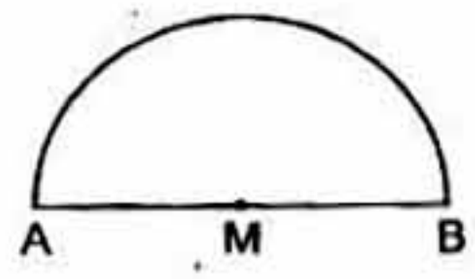
(25) Use the properties of operations in $\mathbb{N}$ to find :

[a] $25 \times 37 \times 4$ **[b]** $5 \times (20 + 15)$

.....

.....

(26) Calculate the perimeter of the opposite figure where AM = 7 cm. $\left(\pi = \frac{22}{7}\right)$



.....

(27) If the number x exceeds twice the number y by 7 , write down the mathematical relation which relates x by y

.....

(28) By using the distribution property find : $37 \times 46 + 37 \times 54$

.....

(29) If the age of a man now is $2x$ years where $x \in \mathbb{N}$ Find :

[a] The age of the man after 6 years

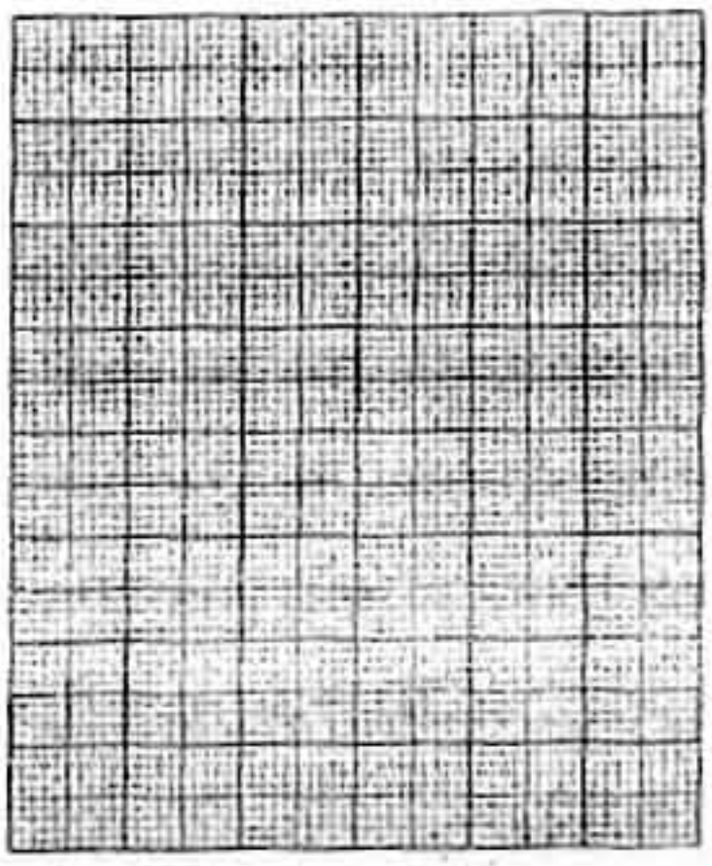
[b] The age of the man since 3 years

(30) The following table the recorded temperature in 40 cities on day :

Temperature	20 –	22 –	24 –	26 –	28 –
No. of cities	7	10	12	6	5

[a] Draw each of histogram and frequency polygon.

[b] What is the number of cities their temperatures are less than 24 ?



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Model 15

Answer the following questions :

1 ***Choose the correct answer :***

(1) If x is an even number , then $x + 2$ is number.

(even *or* odd *or* prime *or* otherwise)

(2) The radius length of a circle whose circumference is 88 cm. = ... cm. $\left(\pi = \frac{22}{7}\right)$ (28 *or* 21 *or* 14 *or* 7)

(3) The isosceles trapezium has line(s) of summetry.

(4 *or* 3 *or* 2 *or* 1)

(4) If the area of a square is 50 cm^2 , then the length of its diagonal is cm. (7 *or* 8 *or* 9 *or* 10)

(5) If $a = 3$, $b = 5$, then $4a - 2b$ = ... (2 *or* 5 *or* 14 *or* 22)

(6) If $x + 3 = 8$, $x \in \mathbb{N}$, then $2x$ = ...

(11 *or* 24 *or* 5 *or* 10)

(7) $37 \times 100 - 37 \times$ $= 37 \times 15$ (115 *or* 75 *or* 85 *or* 63)

(8) The number of altitudes of the triangle is

(1 *or* 2 *or* 3 *or* 4)

(9) $(8 - 8)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(10) 7 is subtracted from double of x = ...

($7 - 2x$ *or* $2x - 7$ *or* $2 - 7x$ *or* $7 + 2x$)

(11) The base length of a triangle is 8 cm. and its height is 5 cm. , then its surface area = ...

(20 cm. *or* 20 cm^2 *or* 40 cm. *or* 40 cm^2)

(12) The smallest counting number is (0 *or* 1 *or* 2 *or* 3)

(13) If the sum of two numbers x and y is 20 , then y = ...

($20 + x$ *or* $20 - x$ *or* $x - 20$ *or* $\frac{x}{20}$)

(14) $(4 \times$$) \times 78 = 7800$ (5 *or* 10 *or* 25 *or* 50)

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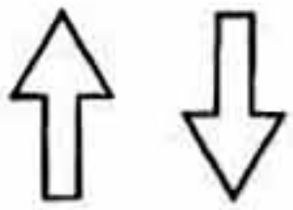
2 ***Complete each of the following :***

(15) The area of the rhombus = $\frac{1}{2}$ × the product of

(16) If A (2 , 3) , B (2 , 7) , then the midpoint of $\overline{AB}$ is

(17) If the number x is 9 more than twice y , then x = ...

(18) The opposite transformation is



(19) If A , B , C are natural numbers , then (A × B) × C = A × (B × C) is called property.

(20) If the perimeter of a rectangle is 20 cm. , its length is x , then its width is

3 ***Answer the following :***

(21) Write in the list method the set : X = $\{x : x \in \mathbb{N} , 1 < x \leq 7\}$, then represent its elements on the number line.

.....

(22) Use the properties of addition to find the result of the following :

82 + 75 + 18 + 25

.....

(23) Which is greater in area ?

A rhombus the lengths of its diagonals are 8 cm. and 6 cm. or a parallelogram in which the lengths of its base is 10 cm. and the corresponding height is 5 cm.

.....

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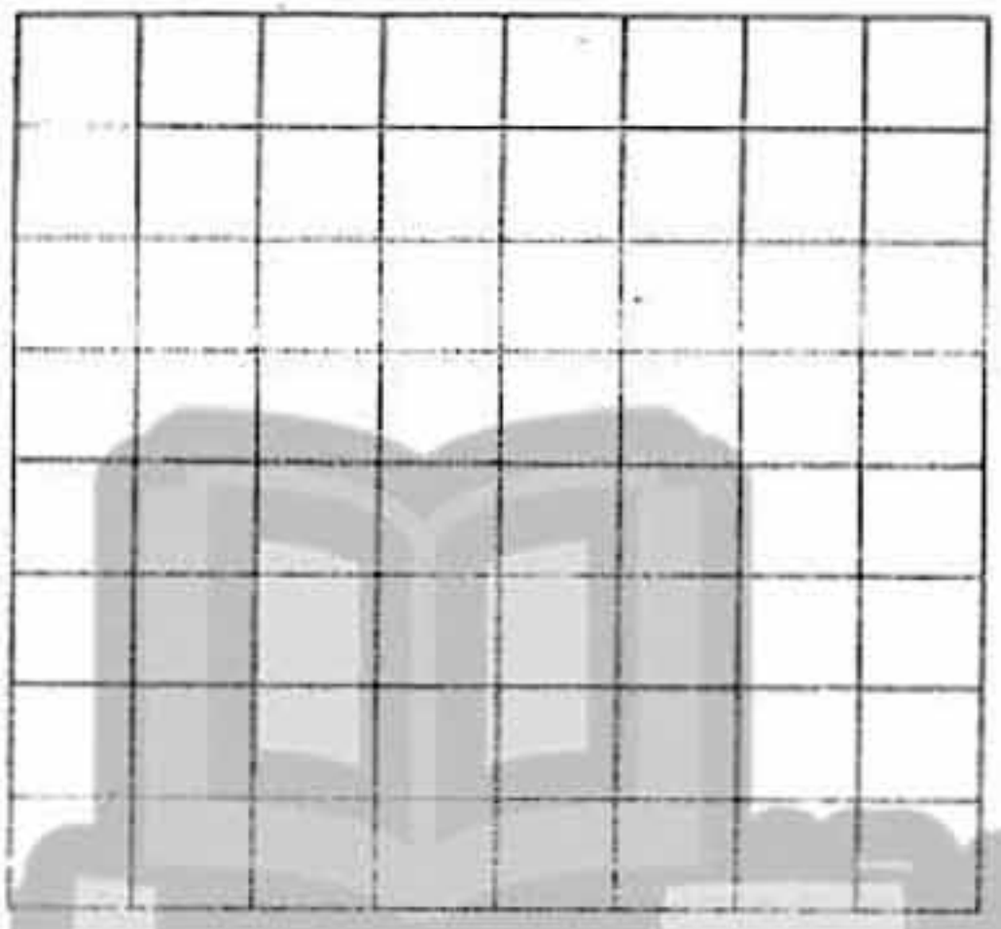
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(24) In the cartesian coordinate plane determine the following points A (6 , 6) , B (6 , 2) , C (1 , 2) and D (1 , 6) , then complete :

[a] The name of the figure ABCD is

[b] The length of $\overline{CD}$ is



(25) If $X = \{x : x \in \mathbb{N} , 1 \leq x \leq 8\}$, $Y = \{2 , 4 , 9\}$, find :

[a] $X \cup Y$ **[b]** $X \cap Y$ **[c]** $X - Y$

.....

(26) Solve the equations in $\mathbb{N}$:

[a] $3x + 7 = 19$ **[b]** $2y \div 5 = 10$

.....

.....

(27) If the diameter length of the wheel of a bicycle is 50 cm.
How long is the distance covered by the bicycle in meter if it turns 1200 turns ? ($\pi = 3.14$)

.....

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(28) Use the operations properties in $\mathbb{N}$ to find :

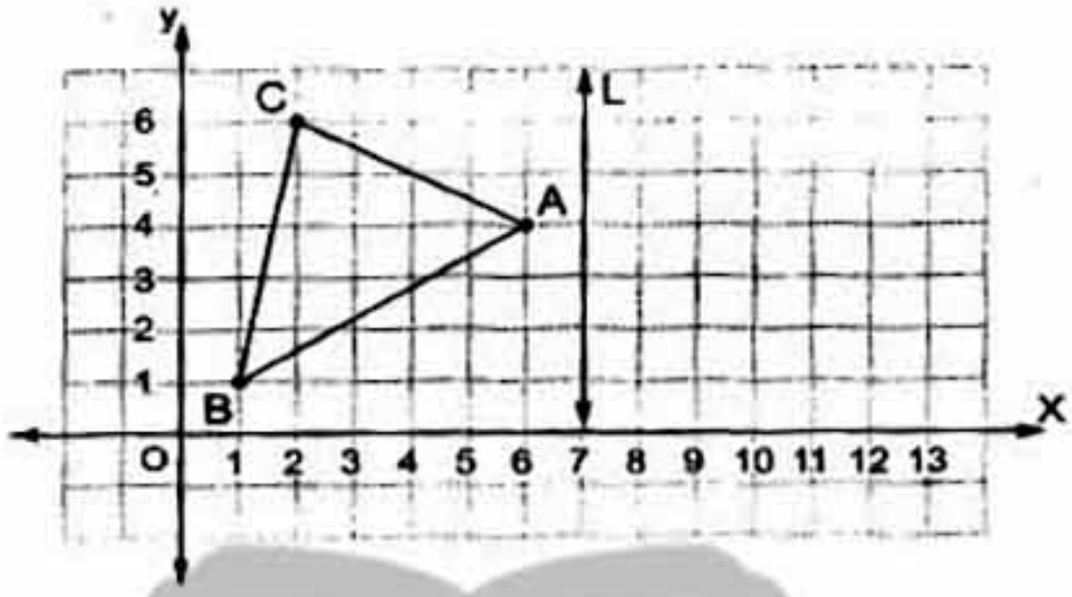
[a] $8 \times 12 \times 125$ **[b]** $231 \times 71 - 31 \times 71$

.....

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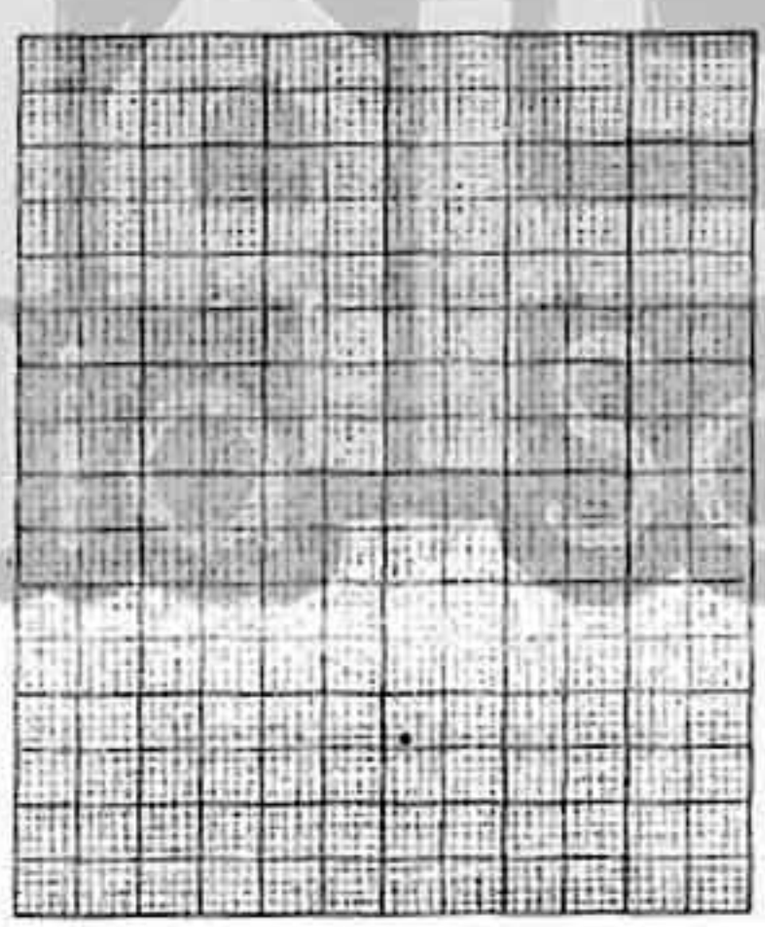
(29) If L is the axis of reflection of the Δ ABC , draw Δ $\grave{A}\grave{B}\grave{C}$ the image of Δ ABC by reflection in L



(30) The following table shows the frequency distribution of the number of work hours of 50 workers :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represent these data.



Model 16

Answer the following questions :

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1 ***Choose the correct answer :***

(1) If $3x = 6$, $x \in \mathbb{N}$, then $5x - 1$ = ... (4 *or* 6 *or* 7 *or* 9)

(2) If a = 1 , b = 2 , then 5 ab = ... (10 *or* 11 *or* 13 *or* 20)

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(3) The isosceles triangle has line(s) of symmetry.

(0 *or* 1 *or* 2 *or* 3)

(4) The area of rhombus whose diagonals lengths are 12 cm. and 16 cm. = ... cm^2 (56 *or* 28 *or* 96 *or* 129)

(5) $\{2 , 3\}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(6) The area of a square whose diagonal length is 14 cm. = ... cm^2

(196 *or* 98 *or* 56 *or* 158)

(7) The length of the base of a triangle whose area is 120 cm^2 and its height is 10 cm. is cm. (2 *or* 6 *or* 12 *or* 24)

(8) The additive neutral element in $\mathbb{N}$ × the multiplicative neutral element in $\mathbb{N}$ = ... (3 *or* 2 *or* 1 *or* 0)

(9) If the product of two numbers a and b is 15 , then b = ...

(15 a *or* $\frac{a}{15}$ *or* $\frac{15}{a}$ *or* a + 15)

(10) If the radius length of a circle is 20 cm. , then its circumference = ... cm. (10 π or 20 π or 40 π or 80 π)

(11) Adding 5 to three times a number y is

(5 × 3 y *or* 5 – 3 y *or* 3 y – 5 *or* 3 y + 5)

(12) If b = 3 , then 2 b – 1 = ... (6 *or* 5 *or* 4 *or* 3)

(13) $\{7 , 9.2\}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(14) If 7 y = 2 x + 3 , then the constant is (y *or* 7 *or* 2 *or* 3)

2 ***Complete each of the following :***

(15) If 735 = (x × 100) + 35 , then x = ...

(16) The set of natural numbers less than 7 and greater than 2 is

(17) 21 + (36 + ...) = (21 + ...) + 84

(18) 99 added to the neutral element of multiplication = ...

(19) 1 × 2 , 2 × 4 , 3 × 8 , ... , ... (in the same pattern)

(20) The area of a parallelogram = ...

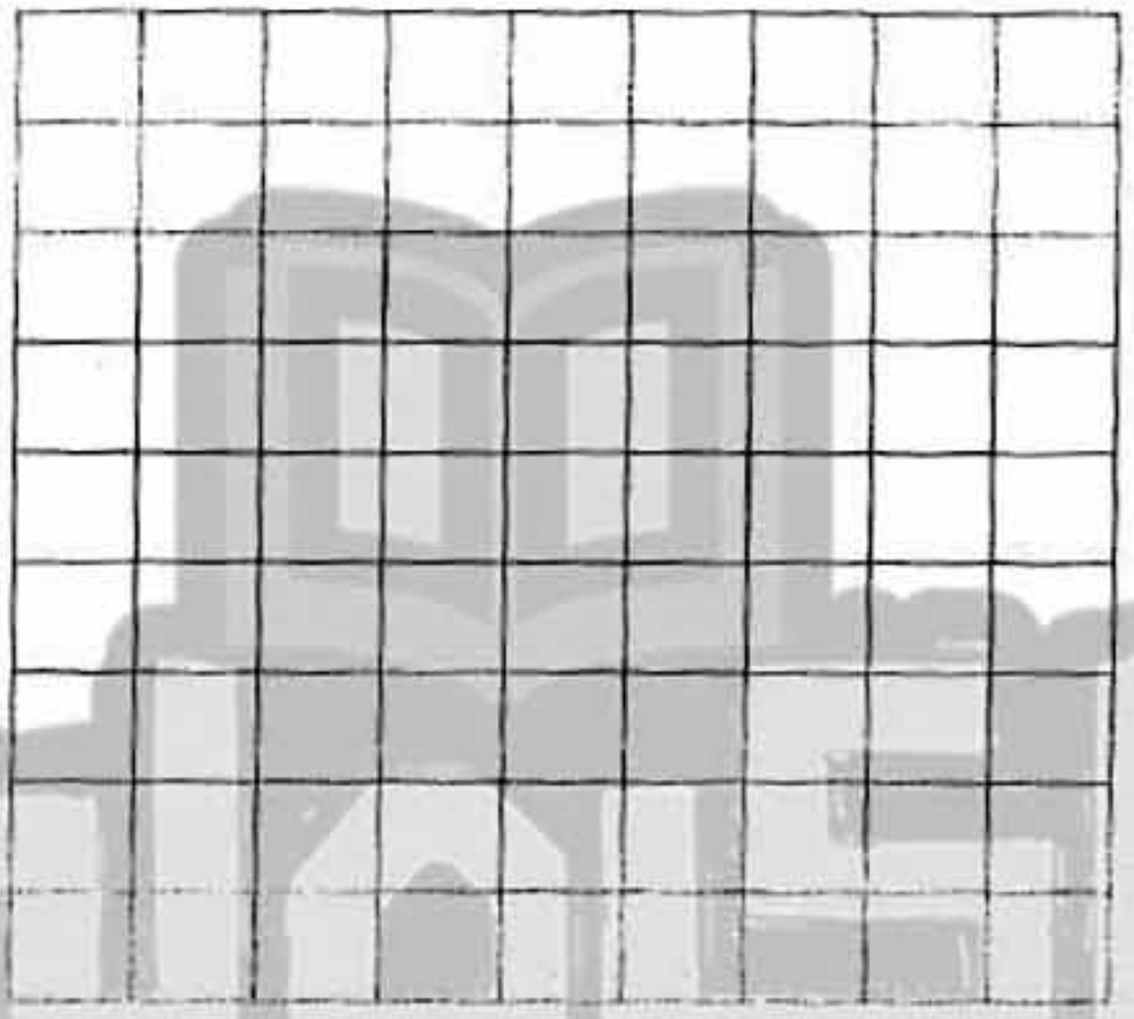
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3 ***Answer the following :***

(21) In the two dimensions cartesian coordinates , determine the points A (2 , 5) , B (5 , 2) , C (5 , 8) , then :

[a] Find the length of $\overline{BC}$

[b] Draw its image by reflection across $\overleftrightarrow{BC}$



(22) Solve the following equation : $5x - 7 = 33$, $x \in \mathbb{N}$

.....

(23) Use the properties of operation in $\mathbb{N}$ to find the result of :

[a] 26 × 999

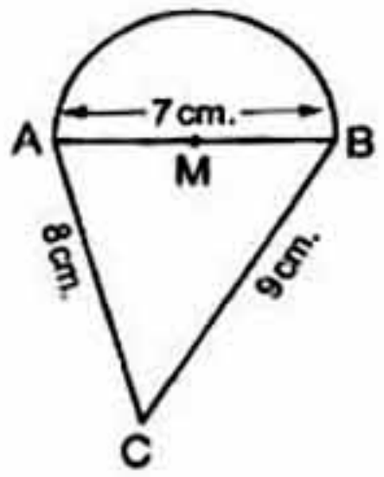
[b] 321 + 627 + 179 + 373

.....

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(24) Calculate the perimeter of the opposite figure where AB = 7 cm. , BC = 9 cm. and AC = 8 cm. $\left(\pi = \frac{22}{7}\right)$



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Final Examinations

(25) Which is smaller in area ?

a square of side length 12 cm. or a rhombus with diagonal 20 cm. and 14 cm.

.....

.....

(26) Using the properties of commutative , distributive and associative to find the value of : $4 \times 31 \times 25$

.....

(27) Ahmed has L.E. x , Samir has L.E. 10 and the sum of what Samir has twice of what Ahmed has is L.E. 24 Write the equation that represents this situation and find the value of x

.....

(28) Solve the following equation in $\mathbb{N}$: $\frac{1}{2} x + 8 = 10$

.....

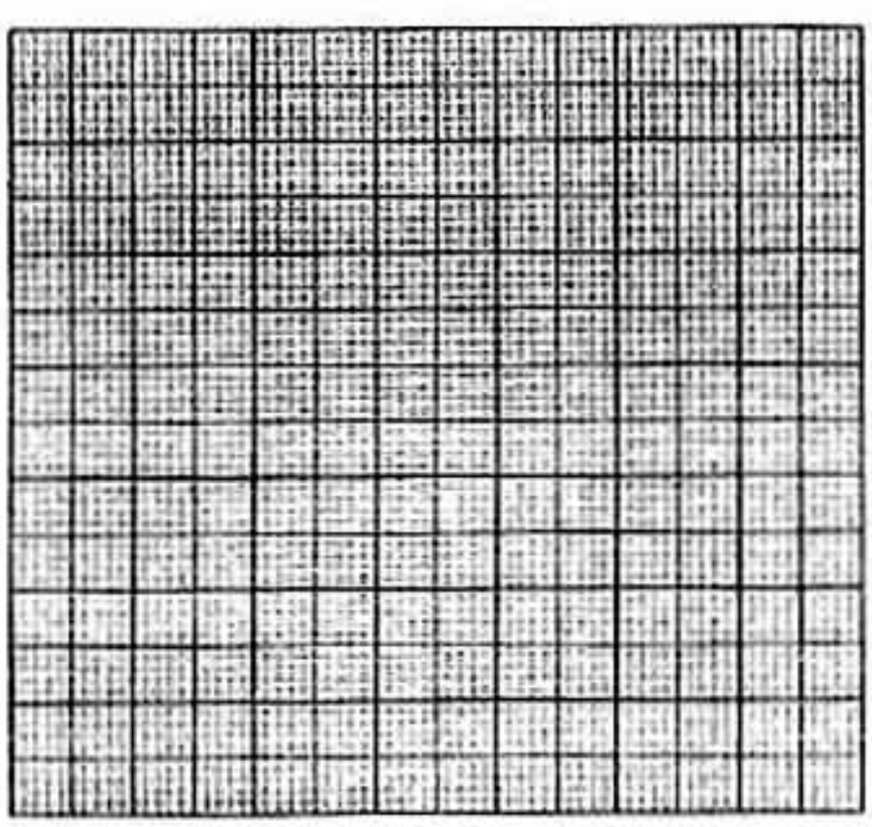
(29) If $a = 5$, $b = 3$, $c = 1$, then find :

[a] $a \times b - c$ **[b]** $\frac{a - c}{b}$

.....

(30) Use the histogram and frequency polygon to represent the data and find the value of A :

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	A	7	40

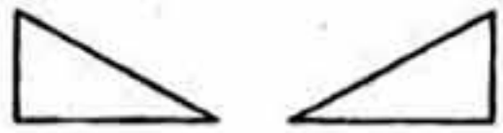


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Model 17

Answer the following questions :

1 ***Choose the correct answer :***

(1) The opposite geometric transformation is 

(rotation *or* translation *or* reflection)

(2) The value of : $10 - 2h$ when $h = 3$ equals

(5 *or* 4 *or* 7 *or* 16)

(3) A circle of radius length 7 cm. , its circumference = ... cm. $\left(\pi = \frac{22}{7}\right)$

(22 *or* 44 *or* 60 *or* 14)

(4) The square whose diagonal length 10 cm. , then its area = ... cm^2

(100 *or* 50 *or* 200 *or* 25)

(5) Four times of a number y is represented by

($y + 4$ *or* $4y$ *or* $y - 4$ *or* $\frac{y}{4}$)

(6) $12 \times 7 = 7 \times$ (12 *or* 7 *or* 84 *or* 5)

(7) 1 , 1 , 2 , 3 , 5 , 8 , ... (in the same pattern)

(9 *or* 11 *or* 13 *or* 40)

(8) $(5 - 8)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(9) The number of axes of symmetry of the rhombus = ...

(0 *or* 1 *or* 2 *or* 3)

(10) The sum of two odd numbers is number.

(even or odd or prime or otherwise)

(11) $215 + 53 = 53 + 215$ is called property.

(commutative *or* closure *or* associative)

(12) If $y + 3 = 7$, then $y + 1$ = ... (4 *or* 3 *or* 5 *or* 6)

(13) The area of the rhombus whose side length is 8 cm. and its height is 4 cm. equals cm^2 (12 *or* 16 *or* 32 *or* 64)

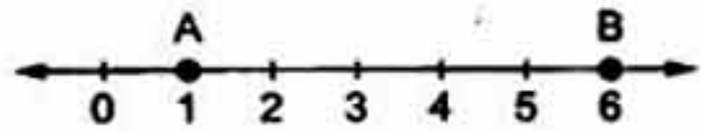
(14) For $a \in \mathbb{N}$, $b \in \mathbb{N}$, then $a \times b$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

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2 ***Complete each of the following :***

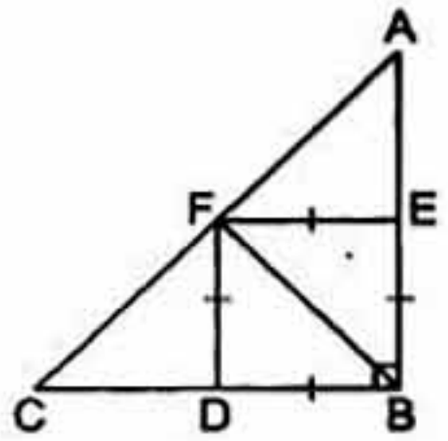
(15) In the opposite figure :



The length of $\overline{AB}$ = ... length units.

(16) If $x \times 4 + x \times 60 = 3 \times 64$, then x = ...

(17) In the opposite figure :



Δ BEF is the image of Δ BDF

by reflection across

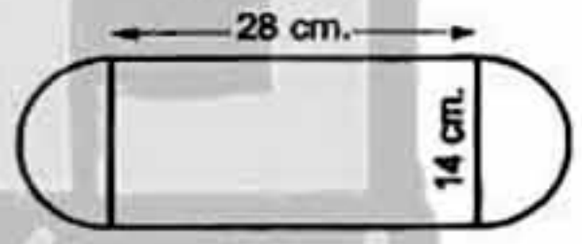
(18) If $(x , 1) = (4 , y)$, then x = ... , y = ...

(19) If the difference between two numbers is 5 , the smaller number is y , then the greater number is

(20) If $X = \{x : x \in \mathbb{N} , 2 \leq x \leq 5\}$, then X = ...

3 ***Answer the following :***

(21) Calculate the perimeter of the opposite figure. $(\pi = \frac{22}{7})$



.....

.....

(22) Use property of commutative and associative in $\mathbb{N}$ to find the result of : $8 \times 34 \times 125$

.....

(23) Solve the following equation when $x \in \mathbb{N}$:

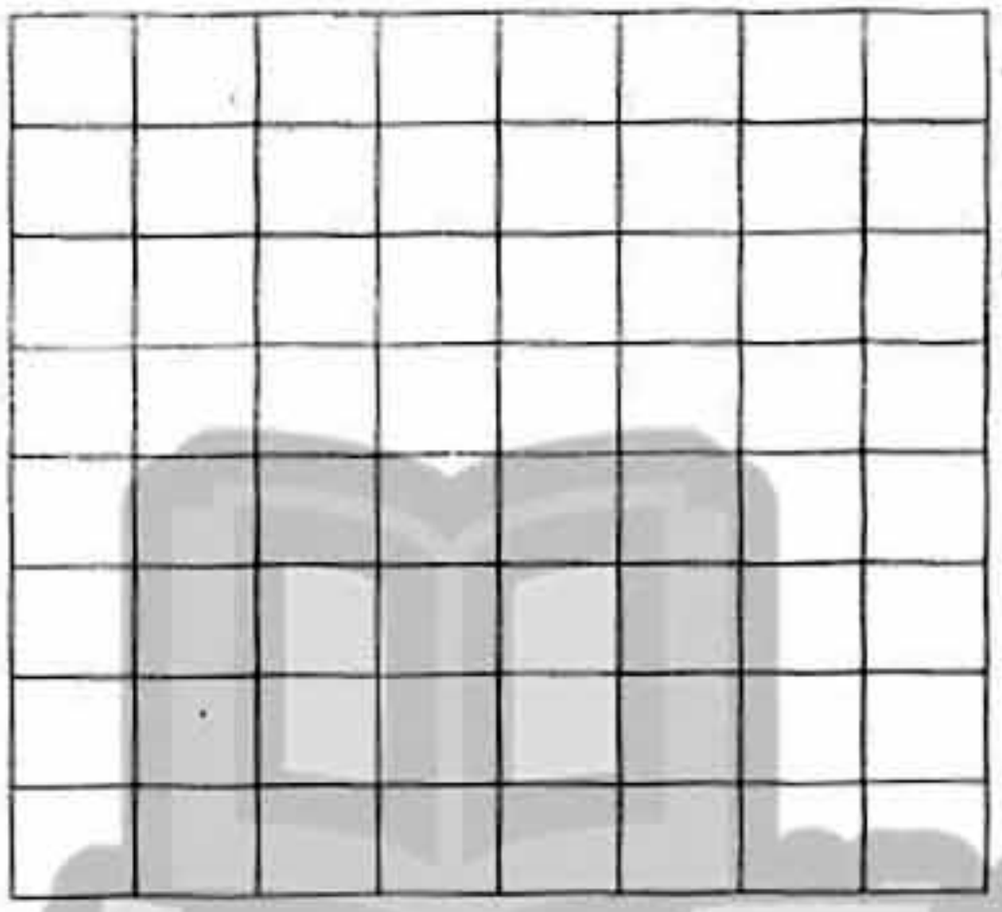
$3x - 6 = 12$

.....

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(24) In the two dimensions coordinates , draw Δ ABC where A (4 , 2) , B (4 , 5) , C (7 , 2) , then find its image by reflection across $\overleftrightarrow{AB}$ and find the length of $\overline{AB}$



(25) Find the area of the triangle whose base length is 12 cm. and height is 8 cm.

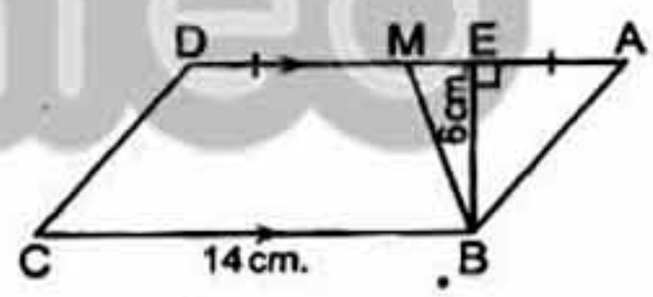
.....

(26) If x is a prime number included between 1 and 6 , write down the values of x

.....

(27) In the opposite figure :

ABCD is a parallelogram in which BC = 14 cm. , BE = 6 cm. , M is the midpoint of $\overline{AD}$, complete :



[a] AD = ... cm. **[b]** AM = ... cm.

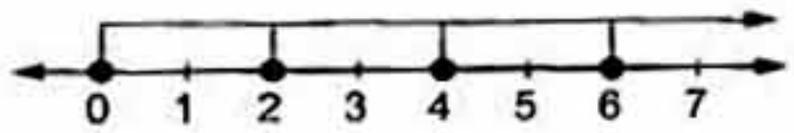
[c] The area of $\square$ ABCD = ... cm^2

[d] The area of Δ ABM = ... cm^2

(28) Use the distributive property to find : 299 × 12

.....

(29) Write down the representing set on the opposite number line :



.....

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الصف الخامس الابتدائى

Final Examinations

(30) The following data represents the marks in Arabic test for students in one classroom :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	8	12	16	14	50

Draw the histogram for his distribution.

Model 18

Answer the following questions :

1 ***Choose the correct answer :***

(1) If $X = \{a : a \in \mathbb{N} , 7 < a < 8\}$, then X = ...

($\{7\}$ *or* $\{8\}$ *or* $\{7 , 8\}$ *or* $\varnothing$)

(2) = $\frac{1}{2}$ the length of its diagonal × itself. (Area of triangle *or* Area of parallelogram *or* Area of square *or* Area of rhombus)

(3) The circle in which the length of the greatest chord is 21 cm. , its circumference = ... cm. $\left(\pi = \frac{22}{7}\right)$

(35 *or* 14 *or* 44 *or* 66)

(4) The set of even numbers ∪ the set of odd numbers = ...

(E *or* O *or* $\varnothing$ *or* $\mathbb{N}$)

(5) $(x - 15)$ $(x - 14)$ where x is a natural number more than 17

(> *or* < *or* = *or* ≥)

(6) The difference between three times a number x and two is

($3x + 2$ *or* $3x - 2$ *or* $3 \times 3x$ *or* $\frac{3x}{2}$)

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(7) If $\frac{1}{7}x - 3 = 2$, $x \in \mathbb{N}$, then x = ... (5 *or* 12 *or* 2 *or* 35)

(8) The circumference of a circle + r = ...

(π *or* 2π *or* $\frac{\pi}{2}$ *or* $\frac{1}{2}$)

(9) The area of the largest rectangle whose perimeter is 24 cm.

= cm^2 (32 *or* 36 *or* 72 *or* 144)

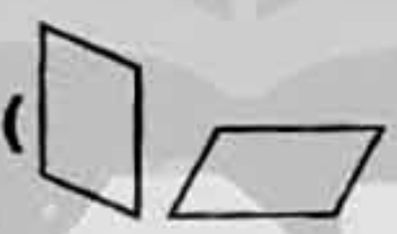
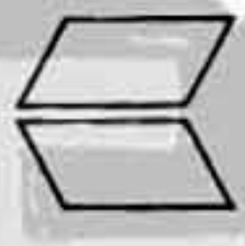
(10) The number of axes of symmetry of the equilateral triangle is

(1 *or* 2 *or* 3 *or* 4)

(11) The area of a parallelogram in which the length of the base is 10 cm. and its height is 5 cm. equals cm^2

(15 *or* 25 *or* 50 *or* 100)

(12) Which of the following geometric transformation represents the reflection ?

( *or*  *or* )

(13) The base length of a triangle whose area is 120 cm^2 and its height is 5 cm. equals cm.

(12 *or* 24 *or* 48 *or* 96)

(14) $\{\frac{1}{3}, 1, 2\}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

2 *Complete each of the following :*

(15) The set of natural numbers less then 7 is

(16) $91 \times (73 + 27) = 91 \times$ = ...

(17) If the side lehgth of a square is 5 cm. , then its area = ... cm^2

(18) If x is an odd number , then $x + 2$ is an number.

(19) 2 , 7 , 12 , 17 , ... , ... (in the same pattern)

(20) If 37 + 73 = 73 + 37 , then its is called property.

3 *Answer the following :*

(21) The lengths of the diagonals of a rhombus are 30 cm. and 20 cm. Calculate its area.

.....

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Final Examinations

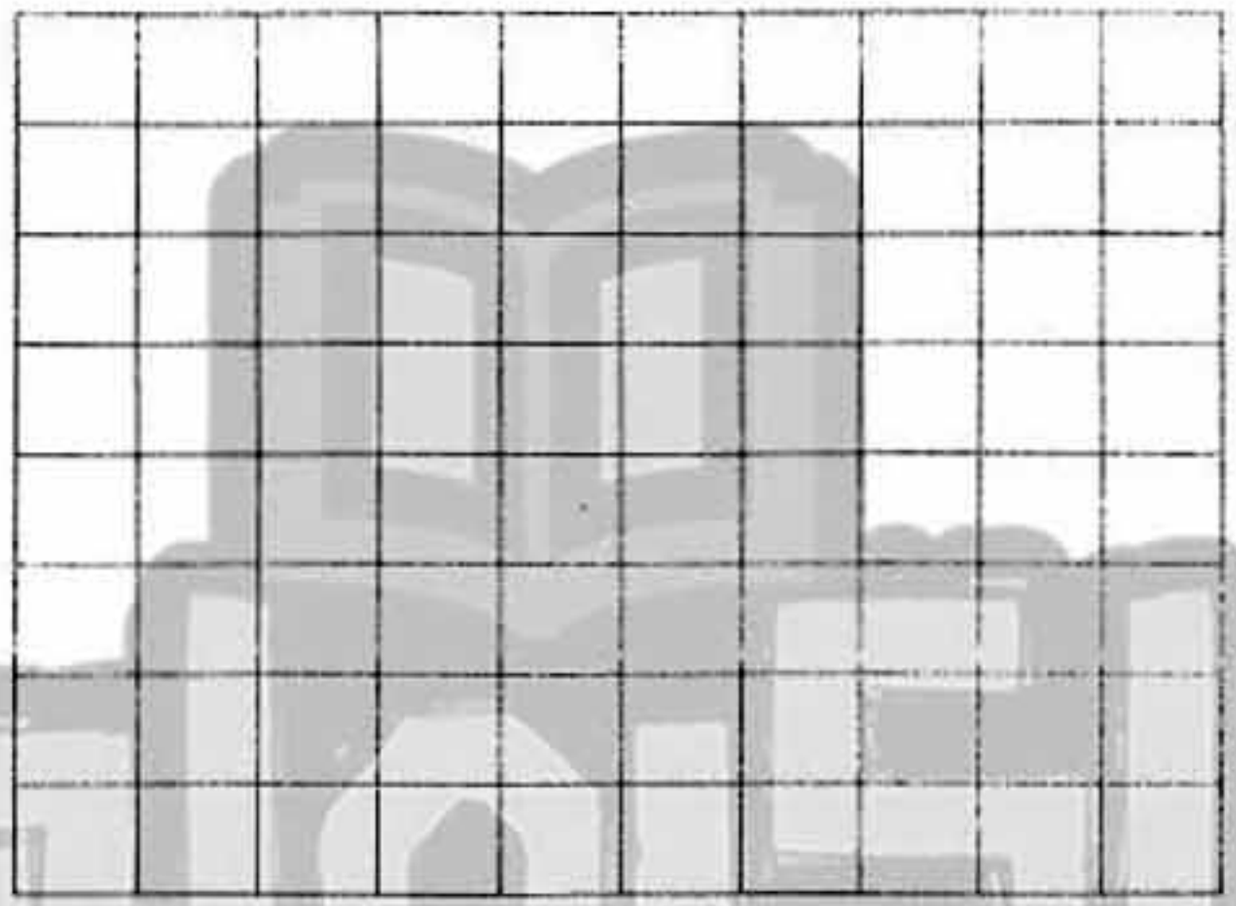
(22) Solve the following equations such that $x \in \mathbb{N}$:

[a] $x - 4 = 1$ **[b]** $3x + 8 = 29$

.....

.....

(23) In a coordinate plane , draw Δ ABC where A (2 , 3) , B (5 , 3) and C (5 , 7) , then draw the image of Δ ABC by reflection across $\overleftrightarrow{BC}$



(24) Using the operation properties to find the value of :

[a] $8 \times 135 \times 125$ **[b]** $56 \times 42 - 56 \times 32$

.....

.....

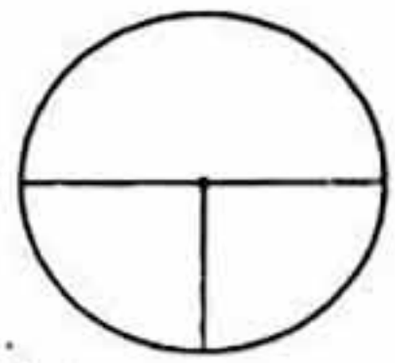
(25) If $X = \{x : x \in \mathbb{N} , 3 \leq x \leq 8\}$, $Y = \{1 , 3 , 5\}$, find :

[a] $X \cap Y$ **[b]** $X \cup Y$ **[c]** $Y - X$

.....

(26) The following table shows the number of students who practice sports. Represent these data using pie graph on the opposite figure :

Game	Football	Basketball	Volleyball
Number	20	10	10



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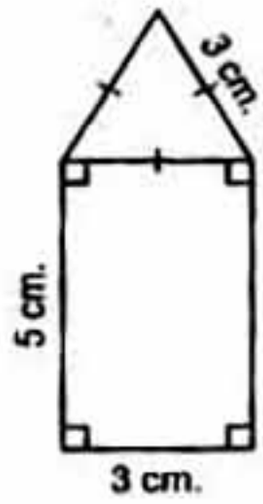
(27) Translate the statement into an equation :

If 9 is subtracted from a number , then the result is 23

.....

(28) Find the perimeter of the opposite figure :

.....



(29) Use the distribution property in ℕ to find : 319 × 101

.....

(30) The following table shows the marks of 35 students in math exam :

Sets	5 –	10 –	15 –	20 –	25 –	Total
Frequency	5	9	k	6	4	35

[a] Find the value of k

[b] Represent these data by a frequency polygon.



RaNia SaYed

Model 19

Answer the following questions :

1 ***Choose the correct answer :***

(1) The triangle has one line of symmetry.

(equilateral *or* isosceles *or* scalene)

(2) The sum of the two numbers x and y is 10 , then y = ...

($x - 10$ *or* $10 - x$ *or* x *or* 10)

(3) The area of triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2 (60 *or* 15 *or* 11 *or* 3)

(4) If x is an even number , then $x - 1$ is an number.

(even *or* odd *or* prime *or* othrwise)

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Final Examinations

(5) The area of square of diagonal length 6 cm. is cm^2.

(18 *or* 36 *or* 24 *or* 6)

(6) If $x - 2 = 4$, then $x + 1$ = ... (6 *or* 3 *or* 7 *or* 5)

(7) 99 × the multiplicative neutral element in $\mathbb{N}$ = ...

(0 *or* 99 *or* 100 *or* 1)

(8) If the ordered pair (x , y) = (3 , 1) , then y = ...

(3 *or* 1 *or* 2 *or* 4)

(9) The perimeter of equilateral triangle whose side is x cm. = ... cm.

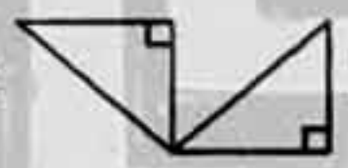
($3 + x$ *or* $x - 3$ *or* $3x$ *or* $\frac{x}{3}$)

(10) A circumference of a circle is 22 cm. , then its radius length = ... cm. where $\pi = \frac{22}{7}$ (3.5 *or* 7 *or* 8 *or* 11)

(11) The sum of two natural numbers $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(12) $(8 \times 3) \times 5$ = ... $\times (3 \times 5)$ (3 *or* 5 *or* 8 *or* 35)

(13) The geometric transformation  is

(translation *or* rotation *or* reflection)

(14) 8×54 = ... ($8 \times 5 + 8 \times 4$ *or* $8 \times 5 + 8 \times 40$ *or* $8 \times 50 + 8 \times 4$)

2 *Complete each of the following :*

(15) The missing number in the pattern :

1 , 4 , 16 , 64 , ... , 1024 , 4096 is

(16) If A (2 , 3) , B (7 , 3) , then AB = ... length units.

(17) $273 \times 53 +$ $\times 273 = 273 \times 100$

(18) $64 + (36 +$$) = (64 +$$) + 35 =$ $+ 35 =$

(19) The rhombus whese area is 36 cm^2 and the length of one of its diagonals is 8 cm. , the length of the other diagonal = ... cm.

(20) The set of the natural numbers which are more than 4 and less than 5 is

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3 ***Answer the following :***

(21) The lengths of two adjacent sides in a parallelogram are 6 cm. and 8 cm. If its greater height is 4 cm. , then find its smaller height.

.....

(22) Using the properties of addition find the value :

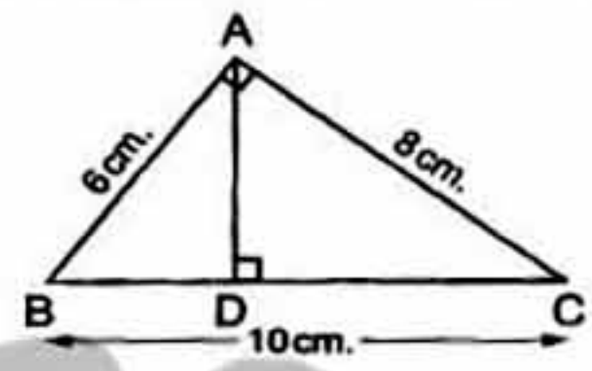
$$32 + 47 + 68 + 3$$

.....

(23) In the opposite figure :

ABC is a right-angled triangle at A , $\overline{AD} \perp \overline{BC}$

Find the area of Δ ABC and the length of $\overline{AD}$



.....

.....

(24) Represent each set of the following on the number line :

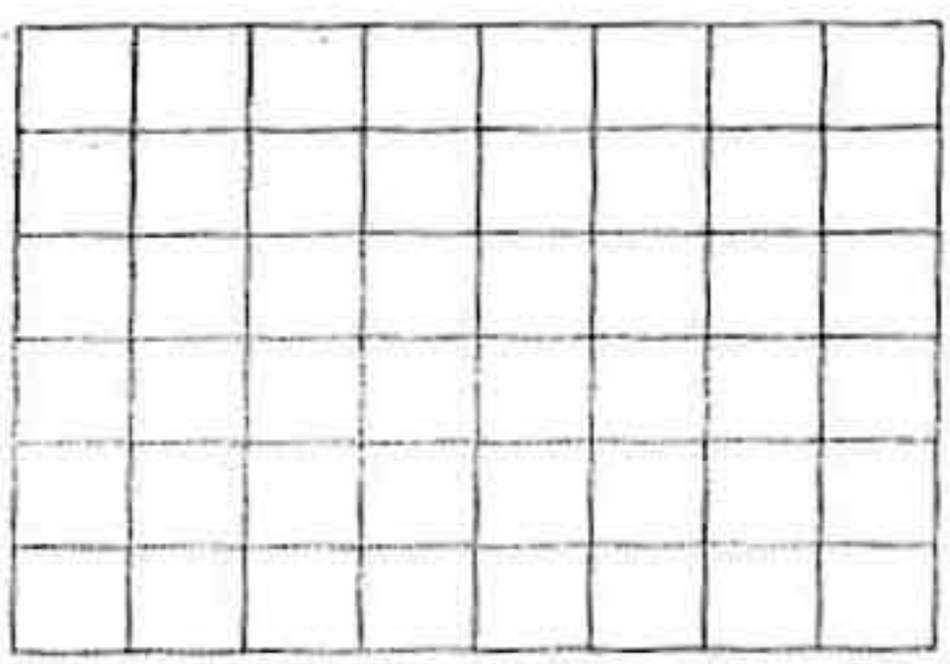
[a] $\{0 , 1 , 3 , 4\}$

[b] $\{1 , 2 , 4\} \cup \{1 , 3 , 4 , 5\}$

.....

.....

(25) In a 2-dimensional coordinate plane , locote the points A (2 , 0) , B (6 , 0) , C (6 , 4) and D (2 , 4) , then name the shape ABCD and find its area.



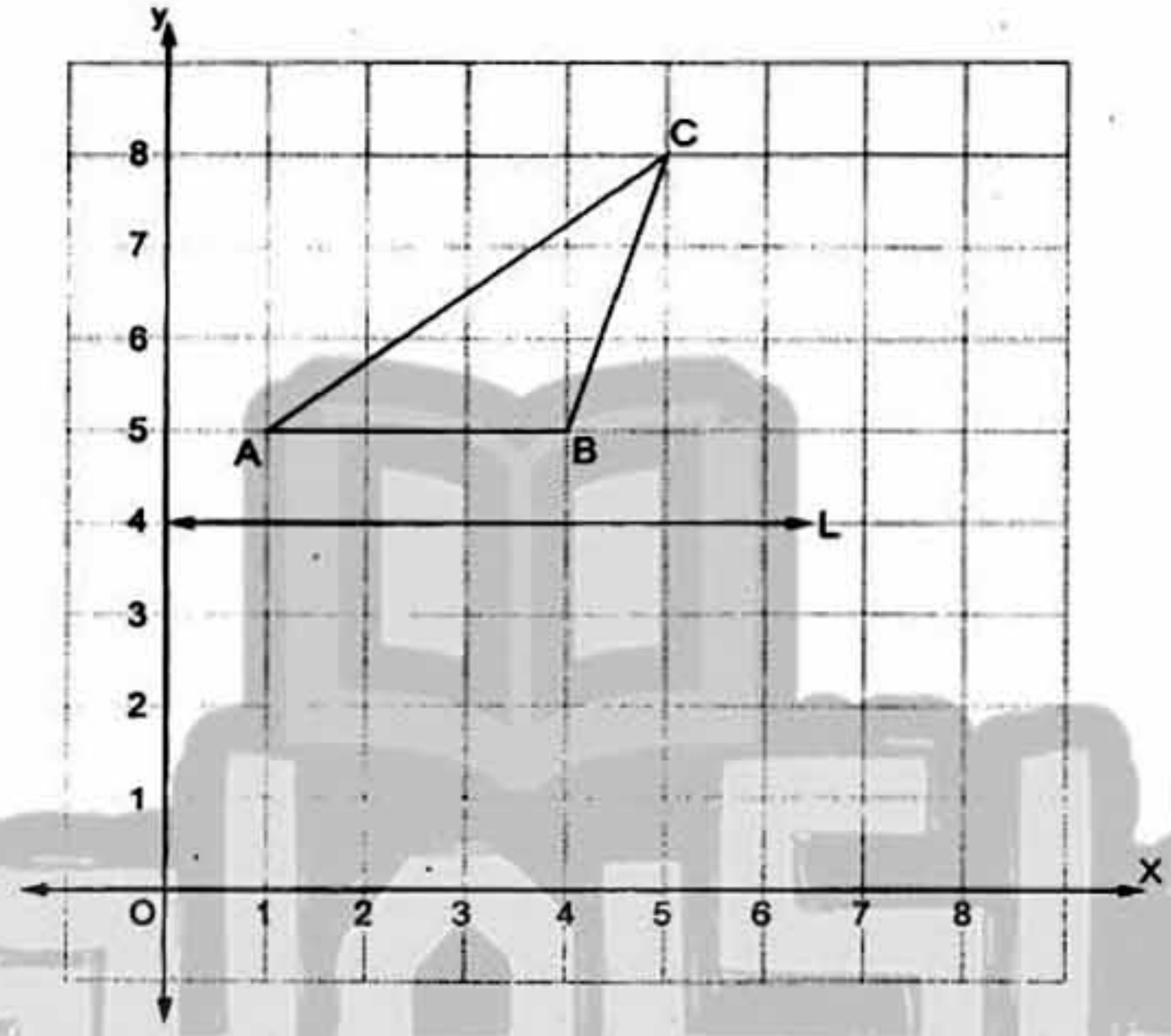
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Final Examinations

(26) The product of a number k and 7 is 56 , find the number k

.....

(27) Draw the image of the following figure by reflection across L :



(28) Solve the equations in $\mathbb{N}$:

[a] $5x - 7 = 33$ **[b]** $4 + x = 18$

.....

.....

(29) Use the distributive property to find the value of : $16 \times 999 \div 16$

.....

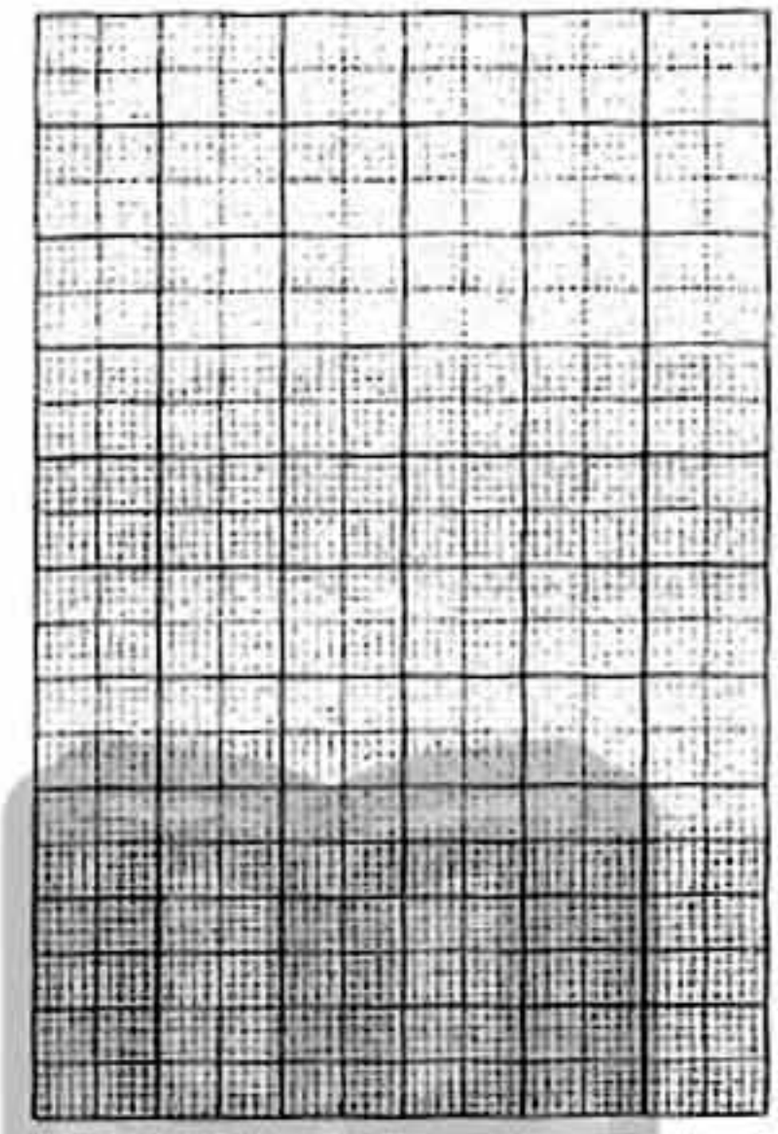
(30) The following table represents the marks of 50 students in a maths exam in a month , where the full mark is 50 :

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

[a] Draw the frequency polygon which represents the given data.

[b] Find the number of students who got 30 marks or more.

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Model 20

Answer the following questions :

1 ***Choose the correct answer :***

(1) If $\mathbb{N}$ is the set of natural numbers , $a \in \mathbb{N}$, $b \in \mathbb{N}$
, then $a \times b$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(2) $5 \times (100 -$$) = 5 \times 98$ (1 *or* 2 *or* 98 *or* 0)

(3) The area of rhombus whose diagonals are 5 cm. and 8 cm.
= cm^2 (40 *or* 20 *or* 26 *or* 13)

(4) If $x + 4 = 10$, then $2x =$ (14 *or* 6 *or* 12 *or* 24)

(5) $\frac{0}{7}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(6) Twice of a number x subtracted from it 5 is
($x-5$ *or* $2x+5$ *or* $2x-5$ *or* $5x$)

(7) The number of axes of symmetry of the rectangle = ...
(0 *or* 1 *or* 2 *or* 3)

(8) The circumference of a circle whose radius length 7 cm.
= $\left(\pi = \frac{22}{7}\right)$ (11 *or* 22 *or* 44 *or* 88)

(9) The additive neutral element in $\mathbb{N}$ is (0 *or* 1 *or* 3 *or* 5)

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Final Examinations

(10) If $x = 2$ and $y = 7$, then $\frac{2y}{x}$ = ... (14 *or* 3 *or* 3.5 *or* 7)

(11) If $X = \{x : x \in \mathbb{N} , x < 3\}$, then X = ...

($\{1 , 2\}$ *or* $\{2\}$ *or* $\{0 , 1 , 2\}$ *or* $\{0 , 1 , 2 , 3\}$)

(12) If 3 a + 2 b = 11 , then the constant is

(3 *or* 2 *or* 11 *or* a)

(13) The opposite transformation  is

(translation *or* reflection *or* rotation)

(14) The triangle whose base length is 3 cm. and its corresponding height is 4 cm. , its area = ... cm. (14 *or* 7 *or* 6 *or* 12)

2 *Complete each of the following :*

(15) The square whose perimeter is 32 cm. , its area = ... cm^2

(16) 1 , 4 , 8 , 13 , ... , ... (in the same pattern)

(17) Any even number × any odd number = ... number.

(18) If $482 = \times + (8 \times 10) + (4 \times 100)$, then x = ...

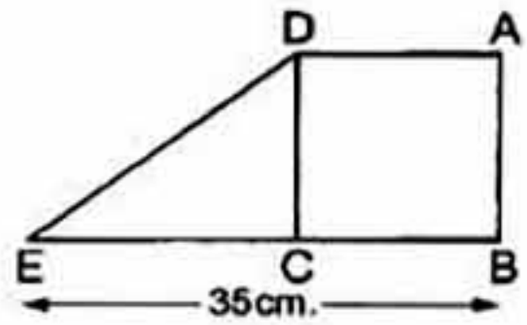
(19) The set of prime numbers which are less than 10 is

(20) Ahmed had x pounds , he bought a pen for 3 pounds , now Ahmed has pounds.

3 *Answer the following :*

(21) ABCD is a square , its perimeter is 60 cm. , $E \in \overrightarrow{BC}$, BE = 35 cm.

Find the area of the figure ABED



.....

(22) Solve the equations in $\mathbb{N}$:

[a] $22 = x + 10$ **[b]** $\frac{1}{2} y + 1 = 3$

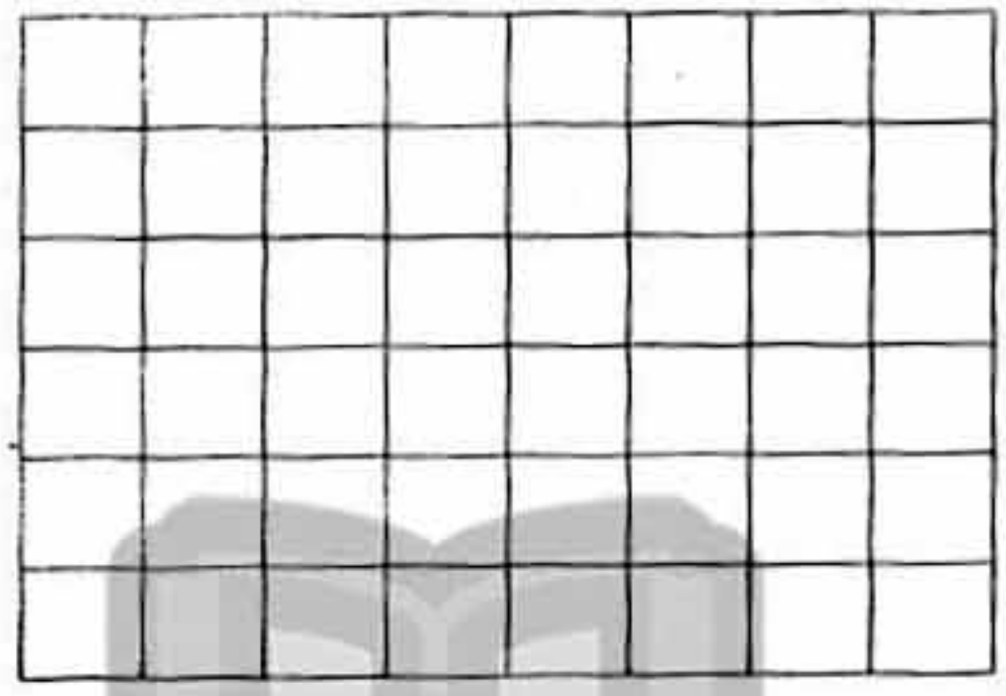
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(23) In the cartesian plane draw Δ ABO in which A (3 , 2) , B (3 , 5) and O (0 , 0) , then draw its image by reflection in $\overleftrightarrow{AB}$



(24) Find the seventh term in the sequence :

1 , 3 , 7 , 15 , 31 , ...

(25) Use the properties of the operations to find the result of :

[a] $25 \times 31 \times 4$ **[b]** $28 + 17 + 72 + 83$

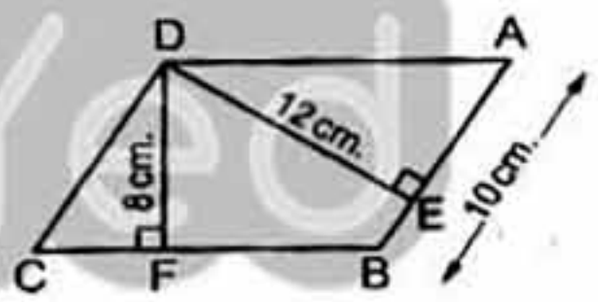
.....

.....

(26) In the opposite figure :

ABCD is a paralleogram in which

AB = 10 cm. , DE = 12 cm. , DF = 8 cm.



Find : **[a]** The area of the parallelogram ABCD

[b] The length of $\overline{BC}$

.....

.....

(27) Write the symbolic expression 3 h – 4 in words.

.....

(28) The area of a square is 50 cm^2 , find the length of its diagonal.

.....

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Final Examinations

(29) Use the distribution property in ℕ to find :

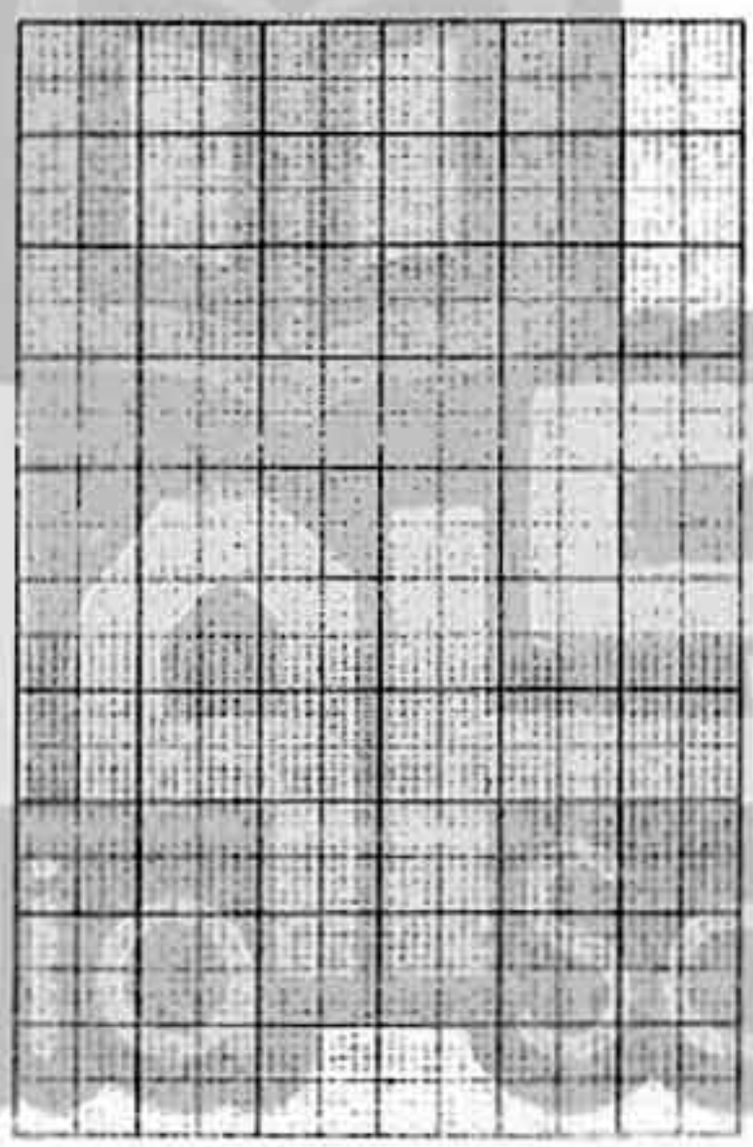
$$47 \times 18 + 47 \times 82$$

.....

(30) The following table shows the frequency distribution of the number of work hours of 50 workers :

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represents these data.



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Final Examinations

Models of school book

Model 1



Answer the following questions :

1 ***Circle the true answer :***

(a) The sum of two natural numbers $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) If $x + 3 = 5$, $x \in \mathbb{N}$, then x = ... (1 *or* 2 *or* 3 *or* 4)

(c) The area of a rhombus whose diagonals lengths are 6 cm. and 8 cm. is cm^2 (48 *or* 12 *or* 24 *or* 40)

2 (a) ***Complete to make the sentence true :***

(1) The circumference of a circle with radius lengths 10 cm. is π cm.

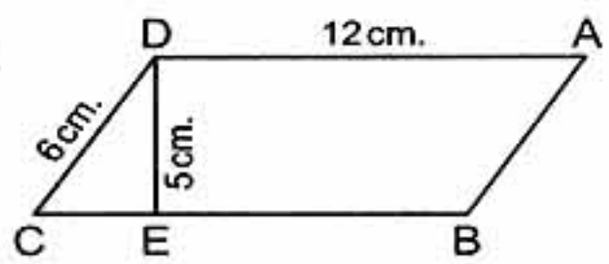
(2) For any natural numbers a , b and c where $(a \times b) \times c = a \times (b \times c)$ is called property.

(b) Which is greater in area : a square whose diagonal length is 10 cm. or a right angled triangle whose legs are 8 cm. and 15 cm. ?

3 Ahmed has L.E. x , Samir has L.E. 10 and the sum of what Samir has and the twice of what Ahmed has is L.E. 24 , Write an equation to represent this situation and find the value of x.

4 (a) In a 2-dimensional coordinate plane : Draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the triangle ABC by reflection across $\overleftrightarrow{BC}$ and find the sum of areas of the triangle and its image.

(b) **In the opposite figure :** ABCD is a parallelogram , where AD = 12 cm. , CD = 6 cm. , DE = 5 cm. and $\overline{DE} \perp \overline{BC}$. Find the area of the parallelogram , then calculate its height drawn from point D on $\overleftrightarrow{AB}$.



5 (b) ***Compare using > , < or = :***

(1) The additive neutral element in $\mathbb{N}$ the multiplicative neutral element in $\mathbb{N}$.

(2) The value of x , when $x + 1 = 3$ the value of x when $2x = 6$

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(b) The following frequency table shows the marks of 35 students in the math exam. Graph these data using the frequency polygon.

Sets	5 –	10 –	15 –	20 –	25 –	Total
Frequency	5	9	11	6	4	35

Model 2

Answer the following questions :

1 ***Complete to get a true sentence :***

(a) The area of a square = $\frac{1}{2}$ the product of ×

(b) For a $\in \mathbb{N}$, b $\in \mathbb{N}$, then a × b $\mathbb{N}$

(c) 23 × (92 + 8) = 23 × = ...

(d) If $X = \{x : x \in \mathbb{N} , 1 \leq x < 5\}$, then X = {..... , ... , ... , ...}

2 (a) ***Circle the true answers :***

(1) The area of a triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2 (30 ***or*** 15 ***or*** 25 ***or*** 36)

(2) If the set of even numbers is E , then E $\mathbb{N}$

($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(3) If the longest chord in a circle is 7 cm. , then the circumference of the circle is cm. where $\pi = \frac{22}{7}$ (3.5 ***or*** 7 ***or*** 22 ***or*** 44)

(b) ***Draw the rectangle ABCD where AB = 2 cm. , BC = 3 cm. and find its image by reflection across*** $\overleftrightarrow{CD}$

3 (a) ABCD is a rhombus in which AC = 10 cm. and BD = 8 cm.

(1) Find its area.

(2) Find the image of Δ ABC by reflection across $\overleftrightarrow{AC}$.

(b) Hatem bought 3 notebooks , where the price of each is L.E. x. He gave the seller L.E. 20 and he still has L.E. 5. Write an equation to represent this information and find x.

4 (a) In 2-dimensional coordinate plane locate the points A (3 , 0) , B (5 , 0) , C (0 , 5) and D (0 , 3). Find the area of the shape ABCD.

(b) Use the commutative and associative properties in $\mathbb{N}$ to calculate :

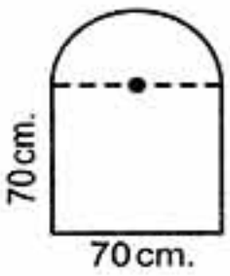
872 + 199 + 128 + 801

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5 (a) **In the opposite figure :** There is a window which has the form of a square whose side length is 70 cm. , and above it , there is a semicircle. **Calculate**.



(1) The perimeter of the window.

(2) If the area of the window is 6825 cm^2 , then find the area of the semicircle.

(b) **The following is a frequency distribution for the working hours of 50 workers. Graph these data using the frequency polygon.**

Sets	2 –	4 –	6 –	8 –	10 –	Total
Frequency	8	9	15	16	2	50

Model 3



Answer the following questions :

1 ***Circle the true answer :***

(a) If $x + 7 = 19$, $x \in \mathbb{N}$, then $x =$ (26 ***or*** 12 ***or*** 11 ***or*** 13)

(b) The area of a square whose diagonal length 6 cm. is

(18 cm^2 ***or*** 36 cm^2 ***or*** 12 cm^2 ***or*** 6 cm^2)

(c) If : $X = \{x : x \in \mathbb{N} , 3 < X < 4\}$, then $x \in$

($\varnothing$ ***or*** {3 , 4} ***or*** {3} ***or*** {4})

2 (a) **Complete to get a true sentence :**

(1) The circumference of a circle whose diameter length x cm. is cm.

(2) If the area of a rhombus is 16 cm^2 and the length of one diagonal is 4 cm. , then the length of the other diagonal is cm.

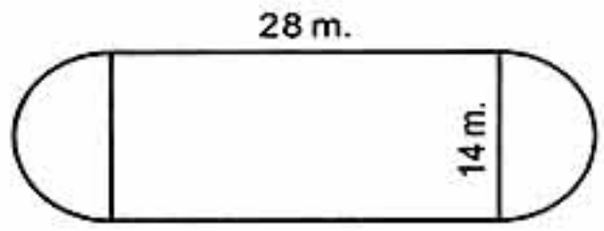
(b) Which is greater in area : A rhombus whose diagonals are 6 cm. and 8 cm. , or a square whose diagonal is 8 cm.

(c) Solve $2x + 9 = 21$, $x \in \mathbb{N}$

3 (a) In a 2 – dimensional coordinate plane , locate the points A (5 , 0) , B (9 , 0) , C (9 , 4) and D (5 , 4). Name the shape ABCD and find its area.

(b) **Use operations properties in $\mathbb{N}$ to calculate :** $25 \times 9892 \times 4$

4 The opposite figure shows a football playground. Find the distance around the figure when $\pi = \frac{22}{7}$

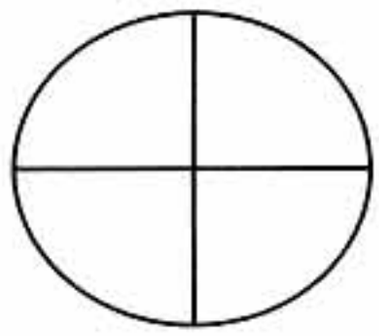


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Final Examinations

5 **The following table shows the number of students who practice sports.**

Represent these data using pie graph on the opposite figure :



Game	Football	Basketball	Volleyball
Number	20	10	10

Model 4

Answer the following questions :

1 ***Circle the true answers :***

(a) $6 + 15 \div 3 \times 5 - 30 =$ (5 **or** 25 **or** 1 **or** 10)

(b) If $3x = 15$, $x \in \mathbb{N}$, then $x =$ (5 **or** 12 **or** $\frac{1}{5}$ **or** $\frac{1}{3}$)

(c) The area of a rhombus whose diagonals 10 cm. and 20 cm. is cm^2. (200 **or** 30 **or** 100 **or** 400)

2 ***Complete to get a true sentence :***

(a) The circumference of a circle whose radius length r = $\pi \times$

(b) If A (2 , 3) and B (2 , 7) , then C (..... , ...) is the midpoint of $\overline{AB}$.

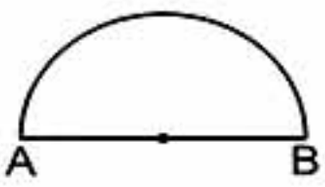
(c) The length of the diagonal of a square with area 50 cm^2 = ...

(d) The area of a parallelogram whose base length is 8 cm. and height 2.5 cm. is cm^2.

3 (a) ***In the opposite figure :***

The length of the diameter $\overline{AB}$ of a semicircle is 14 cm.

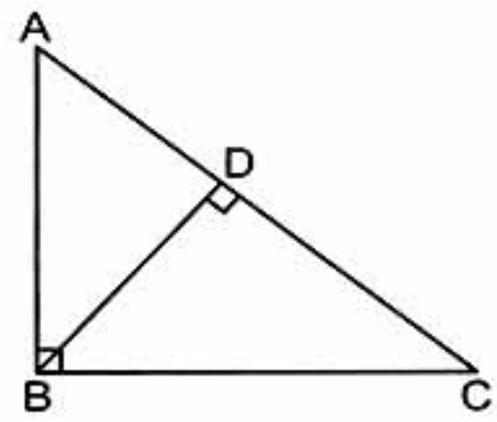
Find the distance around the figure $\left(\pi = \frac{22}{7}\right)$



(b) **Use operations properties to calculate : 653 + 548 + 347**

4 (a) If $X = \{x : x \in \mathbb{N} , 3 \leq x < 8\}$. Use the listing method to write X then represent its elements on a number line.

(b) Δ ABC is a right-angled triangle at B , AB = 6 cm. , BC = 8 cm. and AC = 10 cm. Find the area of the triangle , then draw $\overline{BD} \perp \overline{AC}$ and find the length of $\overline{BD}$.



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(c) Three times of a natural number x is 8 more than the multiplicative neutral. Express this information in an equation and solve it for x.

5 (a) Draw Δ ABC where A (2 , 5) and B (5 , 2) and C (5 , 8) , then find its image by reflection across $\overleftrightarrow{BC}$.

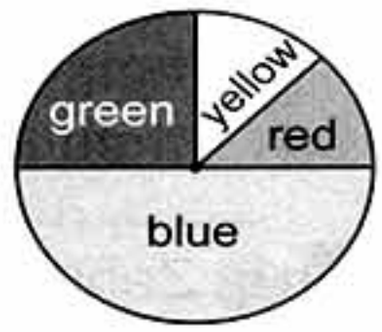
(b) A farm has an area of 24 feddans planted with fruit , vegetables , flowers and plam trees and it is represented by the opposie figure.

Complete :

(1) The area planted with vegetables is 12 feddans and it is represented by the colour.

(2) The green sector represents the area planted with fruit and it has an area of feddans.

(3) The area planted with flowers = the area planted with palm trees = ... feddans.



Model 5



Answer the following questions :

1 ***Complete the following :***

(a) The set of even numbers (E) – The set of odd numbers (O) = ...

(b) The multiplicative neutral element in $\mathbb{N}$ is

(c) Shorouk saved x pounds , her father gave her 10 pounds , then she has pounds

(d) The sum of two numbers is 21 one the them is x , than the other = ...

(e) The side length of a square is 10 cm. , then its area = ...

2 ***Choose the correct answer from these between brackets :***

(a) The set of even numbers the set of natural numbers.

($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(b) If x is an odd number , then $x + 3$ is number.

(odd ***or*** even ***or*** prime)

(c) Twice the number x subtracted 3 from it = ...

($x - 3$ ***or*** $2x + 3$ ***or*** $2x - 3$ ***or*** $3 - 2x$)

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(d) The base length of a triangle is 8 cm. and its height is 5 cm. , then its surface area = ... (40 cm. *or* 40 cm^2 *or* 20 cm^2)

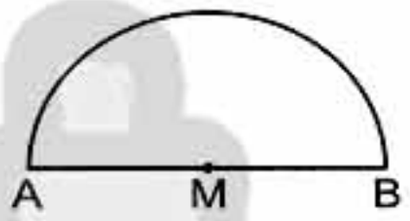
(e) The number of axes of symmetry of the rhombus equals (zero *or* 1 *or* 2 *or* 4)

3 (a) Five even natural numbers , the greatest number is $x + 13$, write down these numbers.

(b) Which is greater in area : A rhombus in which the lengths of its diagonals are 8 cm. and 6 cm. or the parallelogram in which the length of its base is 10 cm. and the corresponding height is 5 cm. , then calculate the difference between them.

4 (a) Zahraa saved 14 pounds , she bought 3 notebooks of x pound for each. The remainder with her was 8 pounds. Express these situations by an equation.

(b) Calculate the perimeter of the opposite figure where AM = 35 cm. $\left(\pi = \frac{22}{7}\right)$



5 (a) In the cartesian coordinates plane determine the points. A (2 , 2) , B (5 , 2) , C (5 , 8) and D (2 , 8). If $\overleftrightarrow{BC}$ is the axis of reflection of the figure ABCD , then determine the image of the figure ABCD.

(b) The following table shows the marks of 50 pupils in exam of mathematics in one of months where the full mark is 50 marks. Draw the frequency histogram and the frequency polygon which represent these date.

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

Model 6

Answer the following questions :

1 ***Choose the correct answer from those given :***

(a) (3 + 9) $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

(b) If : x (75 + 10) = 9 × 85 , then x = ... (5 *or* 85 *or* 9 *or* 8)

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(c) A rhombus in which the lengths of its diagonals are 10 cm. and 12 cm. , its area = ... cm^2 (120 **or** 60 **or** 24 **or** 32)

(d) "Subtract 4 from twice the number y" the symbolic expression for this situation is ($y - 4$ **or** $2y - 4$ **or** $y + 4$ **or** $2y + 4$)

(e) If x is an odd number , then $x + 2$ is number.
(even **or** odd **or** prime **or** otherwise)

2 ***Complete the following :***

(a) $32 + (59 + ...) = (32 + 68) + ...$

(b) The number of axes of symmetry of the rhombus = ...

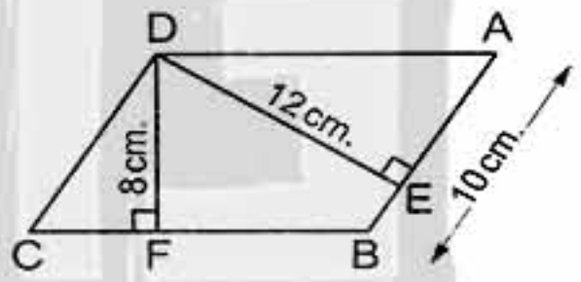
(c) The perimeter of the equilateral triangle whose side length is ℓ cm. = ...

(d) The area of the square = $\frac{1}{2}$

(e) 1 , 4 , 8 , 13 , ... in the same pattern.

3 (a) Which is greater in area. The triangle whose base length is 12 cm. and height = 8 cm. or the parallelogram in which the length of the base = 10 cm. and its height = 5 cm.

(b) **In the opposite figure :**
ABCD is a parallelogram in which
AB = 10 cm. , DE = 12 cm. , DF = 8 cm. **Find :**
(1) The area of the parallelogram ABCD
(2) The length of $\overline{BC}$



4 The length of $\overline{BC}$ by measuring.
In the two dimensions cartesian coordinates. Determine the points A (2 , 5) , B (5 , 2) , C (5 , 8) , draw the figure ABC then find :

(a) The length of $\overline{BC}$ by measuring

(b) Draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$

(c) How many axes of symmetry of the resulted figure and find its area.

5 **(a) Solve the following equations :**

(1) $x + 3 = 12 , x \in \mathbb{N}$ **(2)** $2x + 9 = 21 , x \in \mathbb{N}$

(b) The following table shows the marks of 35 pupils in mathematics exam. in one of months where the full mark is 50. Draw the frequency polygon which represents these data.

Sets	10 –	20 –	30 –	40 –	**Total**
Frequency	8	12	10	5	**35**

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Model 7

Answer the following questions :

1 ***Choose the correct answer from those given :***

(a) If $x + 8 = 15$, $x \in \mathbb{N}$, then $x =$ (3 **or** 7 **or** 6 **or** 5)

(b) The square whose diagonal length is 8 cm. its area = ... cm^2.

(64 **or** 32 **or** 16 **or** 8)

(c) If $X = \{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then $x \in$

($\{4\}$ **or** $\{3\}$ **or** $\{3 , 4\}$ **or** $\{4 , 5\}$)

(d) If O is the set of odd number , then O $\mathbb{N}$

($\subset$ **or** $\in$ **or** $\not\subset$ **or** $\notin$)

(e) The triangle whose base length is 5 cm. , and the corresponding height of it is 6 cm. , its area = ... cm^2.

(30 **or** 15 **or** 25 **or** 36)

2 ***Complete the following :***

(a) 64 + (36 + ...) = (64 + ...) + 35 = ... + 35 = ...

(b) The rhombus whose area is 36 cm^2. and the length of one of its diagonals is 8 cm. , the length of the other diagonal = ... cm.

(c) The square whose area is 72 cm^2. , the length of its diagonal = ... cm.

(d) 1 , 4 , 8 , 13 , ... in the same pattern.

(e) If : $4 + x = 15$, then $x =$

3 (a) The length of the diameter of the wheel of a bicycle is 56 cm. Calculate the covered distance if the wheel turns one turn and what the number of turns to cover distance 352 metres $\left(\text{where } \pi = \frac{22}{7}\right)$

(b) If the number x exceeds twice the number (y) by 7. Write down the mathematical relation which relates x by y.

(c) **If the age of a man now is x years where $x \in \mathbb{N}$ Find :**

(1) The age of the man after 7 years.

(2) The age of the man since 10 years.

4 (a) **Using the properties of commutation , distribution and association Find the value of each of the following :**

(1) $8 \times 137 \times 125$ **(2)** $28 + 59 + 72$

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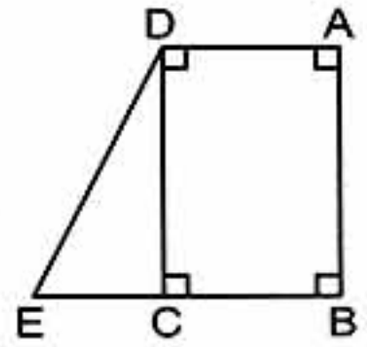


(b) In the opposite figure :

ABCD is a rectangle of area 828 cm^2

$E \in \overrightarrow{BC}$, AD = 23 , BE = 35 cm.

Find the area of Δ DCE



5 (a) The following table shows the marks of 40 pupils in mathematics exam.

(1) Find the value of A

(2) Draw the frequency histogram and the frequency polygon which represent these date.

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	A	7	40

(b) In the orthogonal cartesiancoordinates locate the points. A (8 , 2) , B (3 , 2) , C (3 , 6) , D (8 , 6) , then complete :

(1) The length of $\overline{AB}$ = ... unit.

(2) The length of $\overline{BC}$ = ... unit.

(3) The figure ABCD is

(4) The perimeter of the figure ABCD = ... unit.

Model 8



Answer the following questions :

1 *Choose the correct answer from those between brackets :*

(a) A parallelogram in which , the lengths of two adjancent sides are 5 cm. and 7 cm. , the length of the smaller height = 4 cm. , then its area = ... cm^2 (20 ***or*** 10 ***or*** 28 ***or*** 14)

(b) 7 is subtracted from the number x = ...

($7-x$ ***or*** $2x-7$ ***or*** $7x+2$ ***or*** $14x$)

(c) If : $X = \{x : x \in \mathbb{N} , x < 3\}$, then $x \in$

($\{1 , 2\}$ ***or*** $\{0 , 1\}$ ***or*** $\{2\}$ ***or*** $\{0 , 1 , 2\}$)

(d) The next number in the pattern 1 , 3 , 9 , 27 , ...

(30 ***or*** 33 ***or*** 36 ***or*** 81)

(e) The length of the base of the triangle whose area is 120 cm^2 and its height is 5 cm. = ... cm. (12 ***or*** 48 ***or*** 24 ***or*** 6)

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2 ***Complete the following :***

(a) If : $3x + 7 = 19$, $x \in \mathbb{N}$, then $x =$

(b) The circle whose diameter length is 14 cm. , its circumference = ... cm. $\left(\text{where } \pi = \frac{22}{7}\right)$

(c) The set of prime numbers which are less than 17 is

(d) The perimeter of a rectangle is 16 cm. its width is 3 cm. , then its area = ... cm^2

(e) $74 \times (73 + 27) = 74 \times$ = ...

3 **(a) Use the distribution property to find the value of :**

(1) 519×99 **(2)** 316×1001

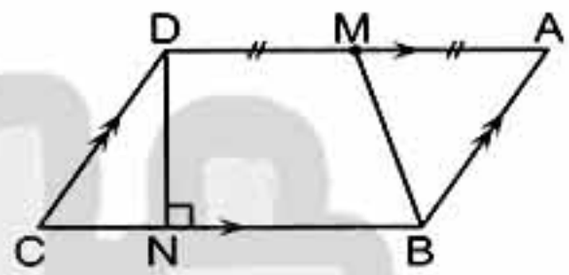
(b) In the opposite figure : ABCD is a parallelogram in which BC = 14 cm. and the area of the parallelogram = 112 cm^2 M is the midpoint of $\overline{AD}$

Complete :

(1) DN = ... cm.

(2) The area of Δ BAM = ... cm^2

(3) The area of the figure MBCD = ... cm^2



4 **In the cartesian coordinates plane :**

(a) locate the points : A (5 , 9) , B (9 , 7) , C (5 , 5) , D (1 , 7) , E (9 , 5)

(b) Draw the line segments $\overline{AB}$, $\overline{AD}$, $\overline{CD}$, $\overline{BC}$

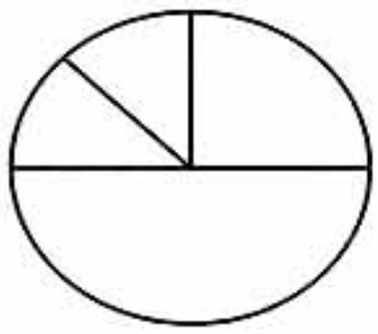
(c) If $\overleftrightarrow{CE}$ is the axis of reflection of the figure ABCD , then determine its image and determine each of the ordered pairs which represent the vertices of the image.

(d) The figure ABCD is a and the area of the figure ABCD = ... square units.

5 **(a) Solve each of the following equations :**

(1) $482 = x + (8 \times 10) + (4 \times 100)$ **(2)** $x \times 3 + x \times 60 = 4 \times 63$

(b) An employee spends his monthly salary as follow 1000 pounds for food. 500 pounds for clothes 250 pounds the rent of the flat , 250 pounds other spending. Represent these data on the shown circular sectors.



Model 9

Answer the following questions :

1 ***Choose the correct answer from those given :***

(a) If $X = \{x : x \in \mathbb{N} , 2 \leq x \leq 3\}$, then $x =$

($\{3 , 2\}$ *or* $\{3\}$ *or* $\{2\}$ *or* $\varnothing$)

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(b) $(49 \div 8)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(c) A rhombus of area 30 cm^2 , the length of one of its diagonals is 6 cm. , then the length of the other diagonal = ... cm.

(4 *or* 6 *or* 8 *or* 10)

(d) The diameter length of circle whose circumference = 88 equals cm. $\left(\pi = \frac{22}{7}\right)$ (28 *or* 14 *or* 7 *or* 21)

(e) The length of the base of the triangle is 8 cm. and its height is 5 cm. , then its area = ... cm^2 (9 *or* 40 *or* 8 *or* 20)

2 ***Complete the following :***

(a) The set of the natural numbers which are more than 4 and less than 5 is

(b) If we add 5 to three times of the number y , then we get the number

(c) The perimeter of a rectangle is 16 cm. , its width is x cm. , then its length = ... cm.

(d) The square whose area is 18 cm^2 , the length of its diagonal = ...

(e) If $945 = (x \times 100) + 45$, then x = ...

3 **(a) Solve each of the following equations :**

(1) $\frac{1}{3}x + 8 = 10$ **(2)** $\frac{1}{6}x - 3 = 2$

(b) The area of a rectangle equals the area of a square whose diagonal length is 12 cm. Find the perimeter of the rectangle if its width equals 8 cm.

4 (a) If the length of the diameter of the wheel of a bicycle is 50 cm. How long is the distance covered by the bicycle in metre. If it turns 1200 turns. (where $\pi = 3.14$)

(b) In the orthogonal cartesian coordinates.

(1) Locate the points A (8 , 5) , B (8 , 2) , C (5 , 7) , D (5 , 2)

(2) If $\overrightarrow{CD}$ is the axis of reflection of the figure ABDC , determine the image of the figure using the suitable symbols also determine each of the ordered pairs which represent the images of the vertices.

5 The following table shows the frequency distribution of the number of work hours of 50 workers.

Sets	4 –	6 –	8 –	10 –	**Total**
Frequency	12	8	16	14	**50**

Draw the frequency polygon which represent these date.

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Model 1

Answer the following questions :

1 ***Choose the correct answer :***

(a) Number of axes of symmetry of square = ... (1 **or** 2 **or** 3 **or** 4)

(b) If : X = $\{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then x = ...

($\{4\}$ **or** $\{3\}$ **or** $\{3 , 4\}$ **or** $\{4 , 5\}$)

(c) x and y are two numbers where their sum is 20 , then y = ...

($20 + x$ **or** $20 - x$ **or** $x - 20$ **or** $\frac{x}{20}$)

(d) If : O is the set of odd numbers , then O $\mathbb{N}$

($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

2 ***Complete the following :***

(a) The length of the diagonal of square is 8 cm. , then its area = ... cm^2

(b) If : $16 - x = 9$, then x = ...

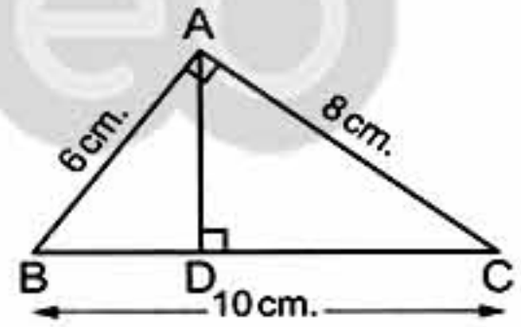
(c) The type of the opposite transformation is a

(d) 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

3 (a) ***In the opposite figure :***

ABC is a right-angled triangle at A , AB = 6 cm. , AC = 8 cm. , BC = 10 cm. , $\overline{AD} \perp \overline{BC}$

find the length of $\overline{AD}$



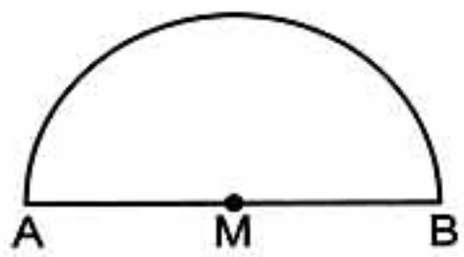
(b) ***Use the properties of addition in $\mathbb{N}$ to find the result of :***

873 + 199 + 127 + 801 (write the used property)

4 (a) ***Solve the equation :***

$2x + 3 = 5$ where $x \in \mathbb{N}$

(b) Calculate the perimeter of the opposite figure where AM = 35 cm. $(\pi = \frac{22}{7})$



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5 (a) On coordinate plane draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$

(b) ***Draw the frequency polygon which represent these data.***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	8	12	9	6	35

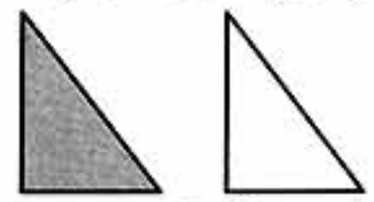
Model 2

Answer the following questions :

1 ***Choose the correct answer :***

(a) (5 – 7) $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

(b) The type of the opposite transformation is a



(translation *or* reflection *or* rotation)

(c) If : $x - 3 = 5$, $x \in \mathbb{N}$, then x = ... (8 *or* 2 *or* 6 *or* 7)

(d) The set of even numbers (E) ∩ the set of prime numbers (P)

(P *or* O *or* $\mathbb{N}$ *or* {2})

2 ***Complete the following :***

(a) The multiplicative neutral element in the natural numbers plus 99 = ...

(b) The length of a rectangle exceeds the width by 5 , If the width of the rectangle = x cm. , then the length of the rectangle = ...

(c) The number of axes of symmetry of the rhombus = ...

(d) The rhombus whose area 24 cm^2 and the length of one of its diagonals is 8 cm. the length of the other diagonal = ... cm.

3 (a) Which is greater in area a triangle whose base length is 10 cm. and height = 7 cm. or a parallelogram. in which the length of the base = 8 cm. and its corresponding height = 4 cm.

(b) ***Using the properties of commutation and association , find the value of each of the following :***

(1) $8 \times 149 \times 125$ **(2)** $28 + 78 + 72$

4 (a) ***If the age of a man now is x years where $x \in \mathbb{N}$ Find :***

(1) The age of the man after 3 years.

(2) The age of the man since 5 years.

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Final Examinations

(b) A circle of circumference 66 cm.
Find the length of its diameter. $\left(\pi = \frac{22}{7}\right)$

5 (a) ***In the coordinate plane :***
Draw the figure ABCD in which A (2 , 3) , B (2 , 5) , C (5 , 5) and D (5 , 2) , then draw its image by reflection in $\overleftrightarrow{CD}$

(b) ***The following table shows the frequency distribution of the number of work hours of 50 workers.***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency histogram and frequency polygon which represent these data.

Model 3

Answer the following questions :

1 ***Choose the correct answer :***

(a) The number of axes of symmetry of the parallelogram = ...
(0 **or** 1 **or** 2 **or** 4)

(b) The area of a square is 72 cm^2 , then the length of its diagonal is
(8 **or** 7 **or** 9 **or** 12)

(c) The difference between two numbers is 7 the smaller is y , then the greater number = ...
(7 y **or** 7 – y **or** y – 7 **or** 7 + y)

(d) The least prime number × any prime number = ... number
(odd **or** even **or** prime)

2 ***Complete the following :***

(a) The additive neutral element in ($\mathbb{N}$) is , while the multiplicative neutral element in $\mathbb{N}$ is

(b) If : 86 × 15 = 86 × x + 86 × 10 , then x = ...

(c) If we add 7 to three times the number y then we shall get the number

(d) If A (2 , 3) and B (2 , 7) , then C (..... , ...) is the midpoint of $\overline{AB}$

3 (a) ***Use the distributive property to get the product in each of the following :***
(1) 98 × 37 **(2)** 299 × 17

(b) ***Solve each of the following equations :***
(1) 3 x + 8 = 29 **(2)** $\frac{1}{7}$ x – 3 = 1

150

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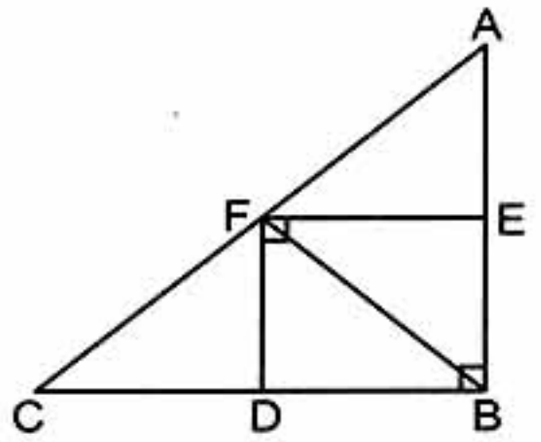


4 (a) ***The length of the diagonals of a rhombus are 12 cm. and 16 cm. and its height is 9.6 cm. find its side length.***

(b) ***In the opposite figure complete :***

(1) Δ BEF is the image of Δ AEF
by reflection in ↔

(2) Δ BDF is the image of Δ CDF
by reflection in ↔



5 (a) If the length of the diameter of the wheel of a bicycle is 50 cm. How long is the distance covered by the bicycle in metre. If it turns 1 000 turns ($\pi = 3.14$)

(b) **Represent the following data by the frequency polygon :**

Sets	5 –	10 –	15 –	20 –	25 –
Frequency	6	12	19	12	4

Model 4

Answer the following questions :

1 ***Choose the correct answer :***

(a) If : x is an odd number , then $x + 2$ is number.
(an even ***or*** an odd ***or*** a prime)

(b) The side length of a rhombus is x and its perimeter is P , then the mathematical relation between P and x is : P = ...
($4x$ ***or*** $x + 4$ ***or*** $x - 4$ ***or*** $x \div 4$)

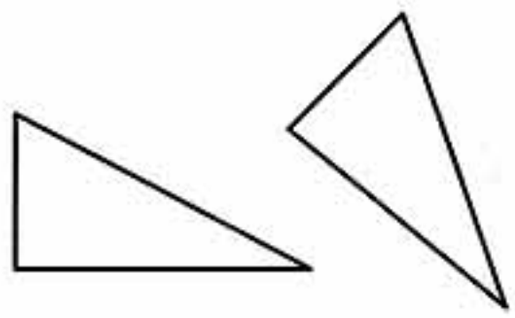
(c) The number of axes of symmetry of equilateral triangle = ...
(0 ***or*** 1 ***or*** 2 ***or*** 3)

(d) 1 , 4 , 9 , 16 , ... (in the same pattern) (23 ***or*** 24 ***or*** 25 ***or*** 30)

2 ***Complete the following :***

(a) If : $X = \{x : x \in \mathbb{N} , 1 \leq x < 6\}$, then X = ...

(b) The type of the opposite transformation is a



(c) The area of a triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2.

(d) The perimeter of a rectangle is 10 cm. and its width = x cm. , then its length = ... cm.

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3 (a) ***In a 2-dimensional coordinate plane :***

Draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the Δ ABC by reflection in $\overleftrightarrow{BC}$ and find the sum of areas of the triangle and its image.

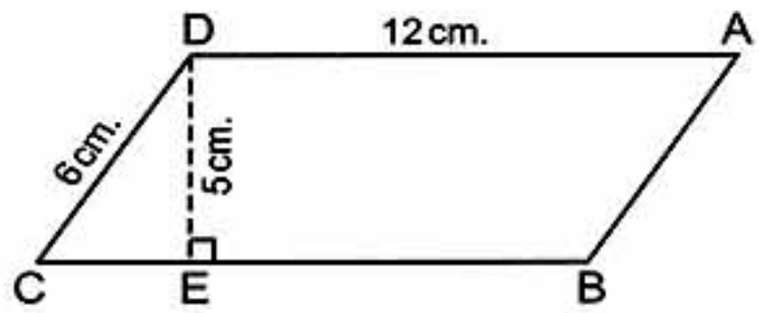
(b) ***By using the properties calculate the value of :***

(1) 123 + 254 + 377 + 246 **(2)** 25 × 125 × 4

4 (a) ***In the opposite figure :***

ABCD is a parallelogram where AD = 12 cm. , CD = 6 cm. , DE = 5 cm. and $\overline{DE} \perp \overline{BC}$

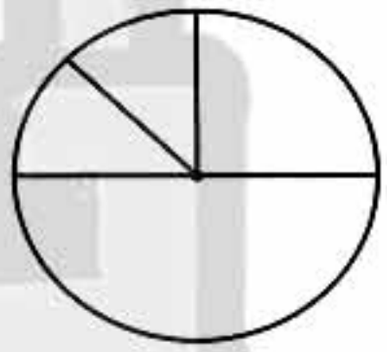
Find the area of the parallelogram , then calculate its height drawn from the point D on $\overleftrightarrow{AB}$



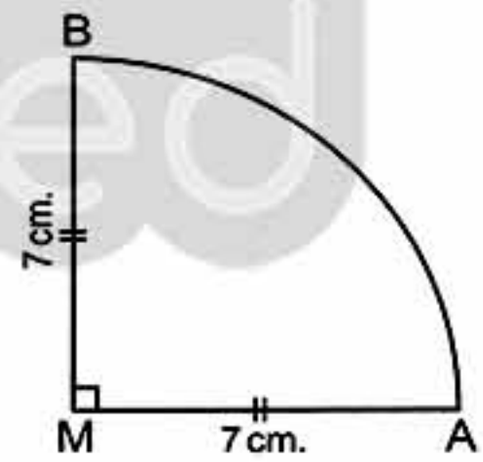
(b) **Solve each of the following equations :**

(1) $\frac{1}{3}x + 8 = 10$ **(2)** $\frac{1}{6}x - 3 = 4$

5 (a) An employee spends his monthly salary as follow 1000 pounds for food 500 pounds for clothes 250 for the rent of the flat , 250 other spending. Represent these data on the shown circular sectors.



(b) Find the perimeter of the opposite figure where MA = MB = 7 cm. $\left(\pi = \frac{22}{7}\right)$



Model 5

Answer the following questions :

1 ***Choose the correct answer :***

(a) Double the number x subtracted 7 from it equals

($x - 7$ ***or*** $2x - 7$ ***or*** $7x + 2$ ***or*** $14x$)

(b) The number of axes of symmetry of the rectangle = ...

(0 ***or*** 1 ***or*** 2 ***or*** 4)

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(c) If : $X = \{x : x \in \mathbb{N} , 5 < x < 6\}$, then X = ...
($\varnothing$ *or* $\{5 , 6\}$ *or* $\{5 , 5\}$ *or* $\{5\}$)

(d) If the longest chord in a circle is 7 cm. , then the circumference of the circle is cm. where $\pi = \frac{22}{7}$ (3.5 *or* 7 *or* 22 *or* 44)

2 ***Complete the following :***

(a) For $a \in \mathbb{N}$, $b \in \mathbb{N}$, then $a \times b$ $\mathbb{N}$

(b) If : A (5 , 2) and B (5 , 6) , then the coordinates of the midpoint of $\overline{AB}$ are (..... , ...)

(c) The least number in the set of counting numbers is

(d) If we multiply the number L by 5 , then we subtract from the result 6 , then we shall get the number

3 (a) Mina bought 3 notebooks , where the price of each is L.E. x . He gave the seller L.E. 20 and he still has L.E. 5 write an equation to represent this information and find x

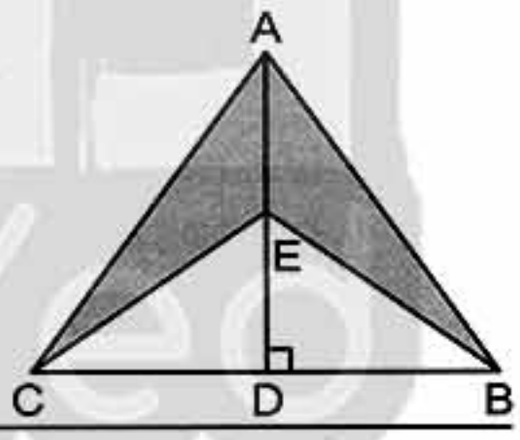
(b) ***By using the properties of operation in $\mathbb{N}$ find the result of :***

(1) $25 \times 98 \times 4$ **(2)** $642 + 173 + 358 + 27$

4 (a) ***The area of a parallelogram = 48 cm^2 and its base = 8 cm. what is its height ?***

(b) ***In the opposite figure :***

$\overline{AD} \perp \overline{BC}$, E is the midpoint of $\overline{AD}$, CB = 6 cm. , AD = 8 cm.
Find the area of the shaded port.



5 (a) In 2-dimensional coordinate plane locate the points A (3 , 0) , B (5 , 0) , C (0 , 5) and D (0 , 3) Find the area of the shape ABCD

(b) ***The following is a frequency distribution for the working hours of 50 workers. Graph these data using the frequency polygon :***

Sets	2 –	4 –	6 –	8 –	10 –	Total
Frequency	8	9	15	16	2	50

Model 6



Answer the following questions :

1 ***Choose the correct answer :***

(a) (5 – 7) $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

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(b) The number of axes of symmetry of the parallelogram = ...

(zero **or** 1 **or** 2 **or** 3)

(c) Twice the number x subtracted 3 from it = ...

($x-3$ **or** $2x+3$ **or** $2x-3$ **or** $3-2x$)

(d) The set of even number (E) $\cap$ the set of prime number (P) = ...

(P **or** O **or** $\mathbb{N}$ **or** $\{2\}$)

2 ***Complete the following :***

(a) 1 , 4 , 8 , 13 , ... , ... in the same pattern.

(b) Shorouk saved x pounds , her father gave her 10 pounds , then she has

(c) The type of the opposite transformation is



(d) The square whose diagonal length is 8 cm. its area = ... cm^2.

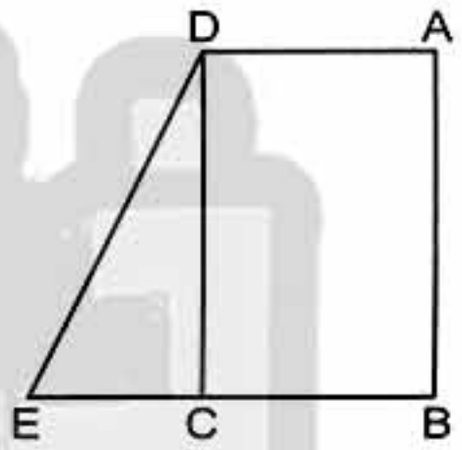
3 (a) ***In the opposite figure :***

ABCD is a rectangle of area 828 cm^2.

$E \in \overrightarrow{BC}$, AD = 23 cm.

, BE = 35 cm.

Find the area of Δ DCE

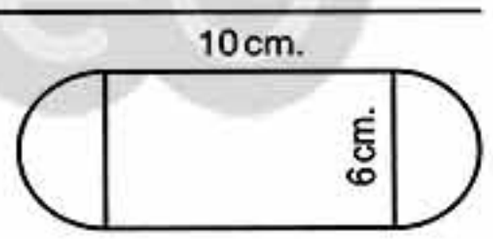


(b) ***Using the properties of commutation and association find value of each of the following.***

(1) $8 \times 133 \times 125$ **(2)** $27 + 69 + 73$

4 (a) ***In the opposite figure :***

Calculate the perimeter of the figure ($\pi = 3.14$)



(b) ***Solve each of the following equation :***

(1) $\frac{1}{3}x + 8 = 9$ **(2)** $2x - 3 = 5$

5 (a) Graph the figure ABCD which A (4 , 8) , B (10 , 8) , C (9 , 4) , D (5 , 4) and then draw its line of symmetry.

(b) ***The following table shows the frequency distribution of the number of work hours of 44 works :***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	10	12	6	16	44

Draw the frequency polygon which represent these data.

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Model 7



Answer the following questions :

1 ***Choose the correct answer :***

(a) The additive neutral element in $\mathbb{N}$ the multiplicative neutral element in $\mathbb{N}$ (> *or* < *or* =)

(b) The circumference of a circle with diameter length 42 cm. is cm. where $\left(\pi = \frac{22}{7}\right)$ (48 *or* 96 *or* 168 *or* 132)

(c) If : x is an odd number , then $x + 2$ is number. (even *or* odd *or* prime)

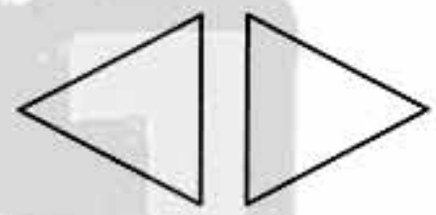
(d) The sum of two natural number $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

2 ***Complete the following :***

(a) The set of even number (E) - the set of odd numbers (O) = ...

(b) Number of axes of symmetry of the rhombus = ...

(c) The opposite geometric transformation is



(d) The sum of two numbers is 15 one of them is x , then the other = ...

3 (a) Write by the list method the set $X = \{x : x \in \mathbb{N} , 3 \leq x \leq 9\}$, then represent its elements on the number line.

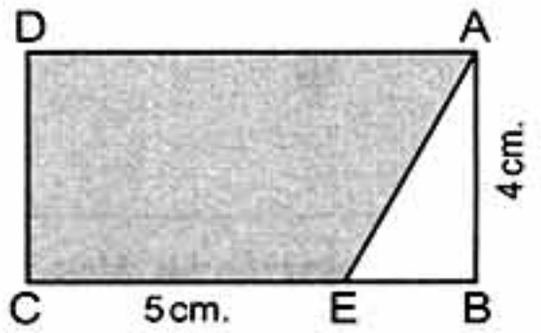
(b) Five consecutive odd number , its middle number is $(x + 12)$ write down these numbers.

4 (a) ***Which is greater in area :***

A rhombus in which the lengths of its diagonals are 6 cm. and 8 cm.
or a square in which the diagonal length = 7 cm.

(b) ***In the opposite figure :***

ABCD is a rectangle of area is 32 cm^2.
and EC = 5 cm.
Calculate the area of the figure AECD



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5 (a) A librarian made an inventory of the books in his library and their types. He found the following : $\frac{1}{4}$ of the books are religious , $\frac{1}{4}$ of the books are literary , $\frac{1}{2}$ of the books are scientific.
Graph that given data using a pie graph. If the total of books was 800 , find the number of each type of books.

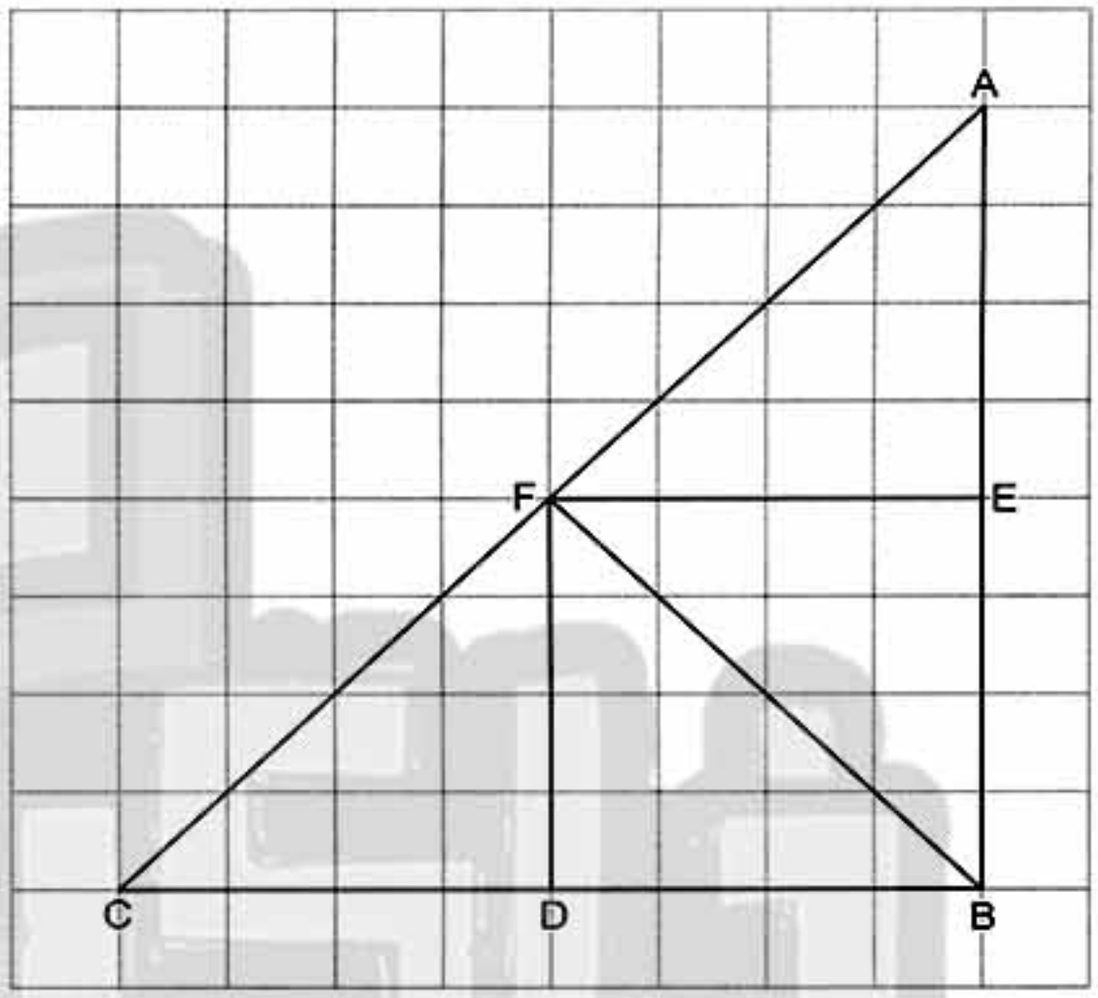
(b) ***In the opposite figure : complete :***

(1) Δ BEF is the image of Δ AEF by reflection across ↔

(2) Δ BDF is the image of Δ CDF by reflection across ↔

(3) Δ ABF is the image of Δ CBF by reflection across ↔

(4) Δ BEF is the image of Δ BDF by reflection across ↔



Model 8

Answer the following questions :

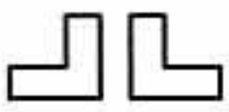
1 ***Choose the correct answer :***

(a) O set of counting number (C) (∈ ***or*** ∉ ***or*** ⊂ ***or*** ⊄)

(b) Mina is x years old , then mina's age 3 years ago was
($3x$ ***or*** $3-x$ ***or*** $x-3$ ***or*** $x+3$)

(c) The number of axes of symmetry of the isosceles triangle = ...
(zero ***or*** 1 ***or*** 2 ***or*** 3)

(d) The opposit egeometric transformation is



(flip ***or*** slide ***or*** turn)

2 ***Complete the following :***

(a) The perimeter of the equilateral triangle whose side length is ℓ cm. = ...

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(b) The set of the natural numbers which are move than 4 and less than 5 is

(c) 1 , 3 , 9 , 27 , ... (in the same pattern)

(d) A parallelogram , in which the lengths of two adjacent sides are 5 cm. and 7 cm. , the length of the smaller height = 4 cm. , then its area = ... cm^2.

3 (a) ***In the opposite figure :***

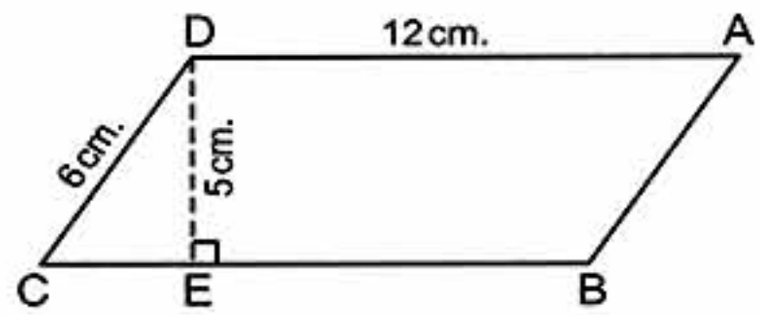
ABCD is a parallelogram ,

where AD = 12 cm.

, CD = 6 cm. , DE = 5 cm. and $\overline{DE} \perp \overline{BC}$

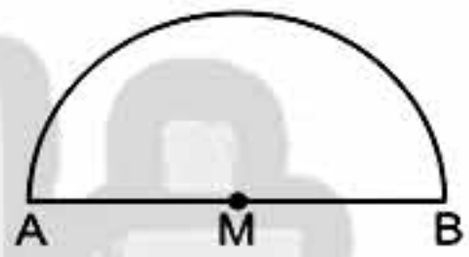
Find the area of the parallelogram.

then calculate its height drawn from point D on $\overleftrightarrow{AB}$



(b) Calculate the perimeter of the opposite figure where

AM = 35 cm. $\left(\pi = \frac{22}{7}\right)$



4 (a) ***Solve the equation :*** $75 = 5x + 7 \times 10$

(b) a , b , c and d are four natural numbers where d > a , b < c , c < d , b < d and b > a Represent these data on a number line.

5 (a) Draw on the coordinates plane the triangle ABC where A (1 , 0) , B (2 , 2) and C (2 , 5) , then draw its image by reflection on $\overleftrightarrow{BC}$

(b) ***The following table shows the recorded tempratures in 40 cities on a day :***

Temperatures	20 –	22 –	24 –	26 –	28 –	Total
Number of cities	7	9	11	8	5	40

(1) Find the number of cities with temperatures less than 24 degrees Celsius.

(2) Draw each of the histogram and the frequency polygon.

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Model 9

Answer the following questions :

1 ***Choose the correct answer :***

(a) The number of axes of symmetry of trapezium = ...

(0 **or** 1 **or** 2 **or** 4)

(b) The perimeter of rhombus is 20 cm. and its height is 6 cm. , then its area = ... cm^2. (30 **or** 120 **or** 24 **or** 26)

(c) x and y are two numbers where their sum is 10 then y = ...

($10 + x$ **or** $10 - x$ **or** $x - 10$ **or** $10x$)

(d) The multiplicative identity in $\mathbb{N}$ is (0 **or** 1 **or** 2 **or** 3)

2 ***Complete the following :***

(a) The smallest natural number

(b) If : $2x = 10$, then x = ...

(c) $0 + a = a + 0$ = ... (..... property)

(d) If : A (3 , 7) and B (5 , 7) , then C (..... , ...) is the midpoint of $\overline{AB}$

3 (a) Three times of a natural number x is 8 more than the multiplicative neutral. Express this information in an equation and solve it for x

(b) ***By using the properties of operation in $\mathbb{N}$ find the result of the following :***

(1) 18×99 **(2)** 56×1002

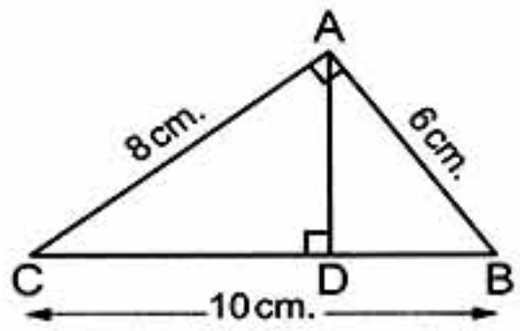
(3) $4 \times 49 \times 25$ **(4)** $156 + 871 + 344 + 129$

4 (a) ***In the opposite figure :***

ABC is a right-angled triangle at A

AB = 6 cm. , AC = 8 cm. , BC = 10 cm.

, $\overline{AD} \perp \overline{BC}$ Find the length of : $\overline{AD}$



(b) ***Which is greater in area ?***

A rhombus in which the lengths of its diagonals are 6 cm. and 8 cm. or a parallelogram in which its base length 4 cm. and its corresponding height 8 cm.

5 (a) In the cartesian coordinates plane , from the following figure. Find the image of the square by reflection on the straight line L where A (5 , 2) , B (7 , 4) , C (9 , 2) , D (7 , 0)

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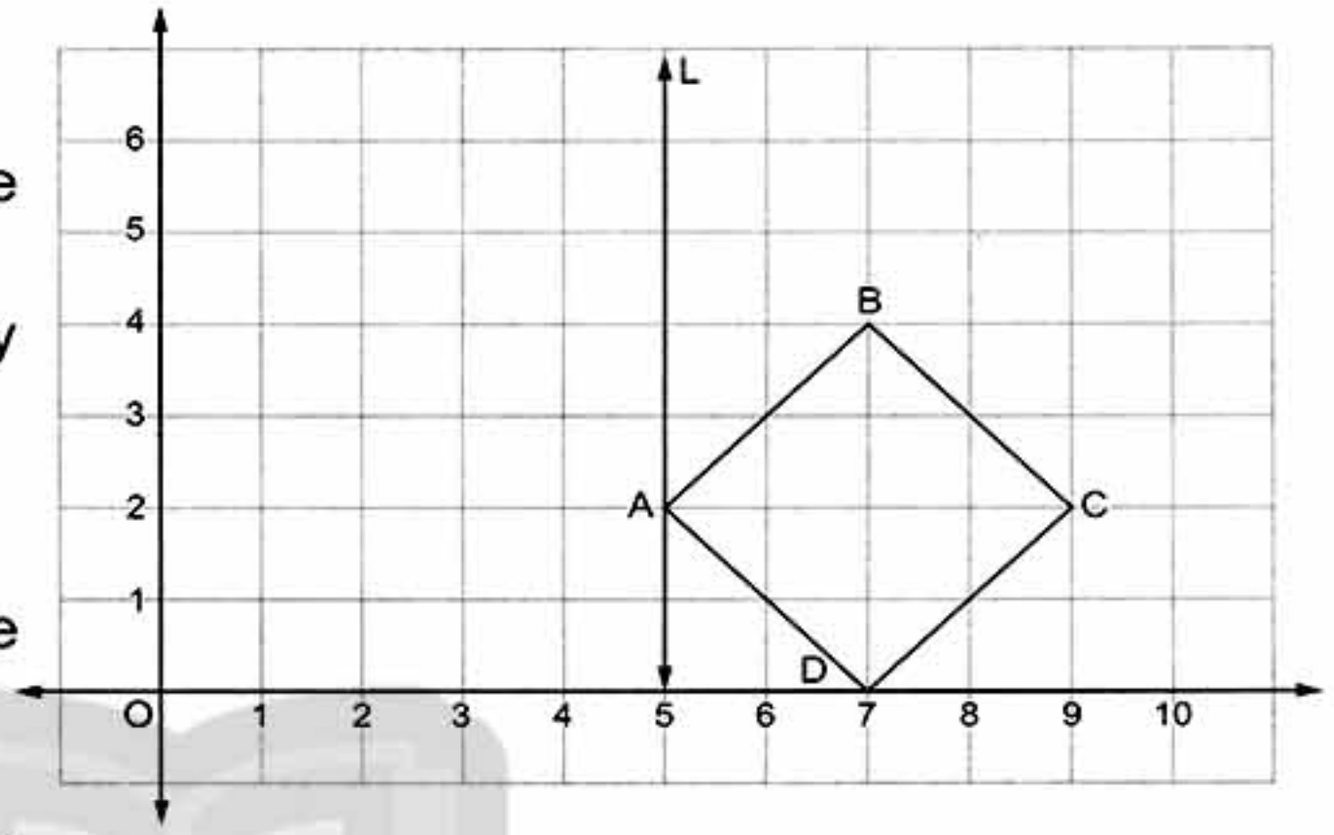
Then find :

(1) The image of A by reflection in the straight line L.

(2) The image of B by reflection in the straight line L.

(3) The image of C by reflection in the straight line L.

(4) The image of D by reflection in the straight line L.



(b) ***Represent this data by a histogram and frequency polygon :***

Sets	0 –	10 –	20 –	30 –
Frequency	40	20	30	10

Model 10

Answer the following questions :

1 ***Choose the correct answer :***

(a) If O is the set of odd number , then O $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The side length of a rhombus is x and its perimeter is P the mathematical relation between P and x is : P = ...

($4x$ *or* $x + 4$ *or* $x - 4$ *or* $x \div 4$)

(c) The number of axes of symmetry of an equilateral triangle = ...

(zero *or* 1 *or* 2 *or* 3)

(d) The type of the opposite transformation is

(translation *or* reflection *or* rotation)

2 ***Complete the following :***

(a) If : $X = \{x : x \in \mathbb{N} , 1 \leq x < 5\}$, then X = ...

(b) If we subtract 5 from twice the number Z , then we shall get the number

(c) The circumference of a circle with diameter length 20 cm. is π cm.

(d) If x is an even number , then $(x + 1)$ is number.

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3 (a) The area of a piece of paper is 312.5 cm^2. If 7 congruent squares with diagonal length of each 9 cm. are cut off. Find the area of the left part of the paper.

(b) Find the radius length of the circle if its circumference is 66 cm. $(\pi = \frac{22}{7})$

4 (a) ***Use operation properties in $\mathbb{N}$ to calculate.***

(1) $25 \times 9892 \times 4$ **(2)** $862 + 199 + 138 + 801$

(b) ***Solve :*** $2x + 3 = 15 , x \in \mathbb{N}$

5 (a) ***In a coordinate plane. Represent the points :***

A (2 , 3) , B (3 , 5) and C (5 , 3) , then find the image of Δ ABC by reflection in $\overleftrightarrow{AC}$

(b) ***The following table shows the number of students who practice sports. Represent these data using pie graph :***

Game	Football	Basketball	Volleyball
Number	20	10	10

Model 11

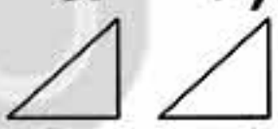
Answer the following questions :

1 ***Choose the correct answer :***

(a) $\frac{2}{5-5}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The smallest natural number is (0 *or* $\frac{1}{2}$ *or* $\frac{1}{9}$ *or* 1)

(c) The type of the opposite transformation is



(rotation *or* translatation *or* reflection)

(d) The circumference of a circle = ...

($2\pi d$ *or* πr *or* $4\pi r$ *or* $2\pi r$)

2 ***Complete the following :***

(a) $20 - x = 17$, then x = ...

(b) , ... , 12 , 24 , 48 (in the same pattern)

(c) The lengths of two adjacent sides of a parallelogram are x and y , then its perimeter = ...

(d) If : A (2 , 7) and B (2 , 3) , then the coordinates of the midpoint of $\overline{AB}$ are (..... , ...)

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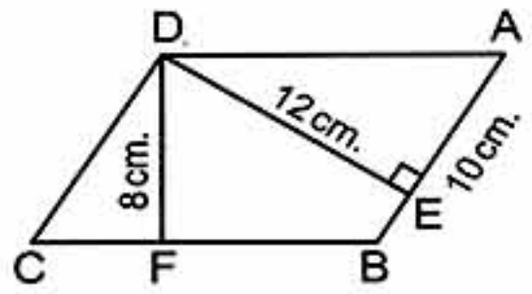
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3 (a) Five even natural numbers , the greatest number is $x + 13$, write down these number.

(b) ***In the opposite figure :***

ABCD is a parallelogram in which AB = 10 cm. , DE = 12 cm. , DF = 8 cm. find : the length of $\overline{BC}$



4 (a) ***Solve the following equations :***

(1) $3x + 5 = 26$ $\quad x \in \mathbb{N}$

(2) $\frac{1}{5}x - 2 = 10$ $\quad x \in \mathbb{N}$

(b) If the area of triangle = 6 cm^2 and the length of the base = 3 cm. Find its corresponding height.

5 (a) ***In the orthogonal cartesian coordinates locate the points A (8 , 2) , B (3 , 2) , C (3 , 6) and D (8 , 6) , then complete :***

(1) The length of $\overline{AB}$ = ... unit.

(2) The length of $\overline{BC}$ = ... unit.

(3) The figure ABCD is

(4) The perimeter of the figure ABCD = ... unit.

(b) ***Using the following table of data to make the histogram :***

Sets	5 –	7 –	9 –	11 –
Frequency	4	12	9	1

Model 12

Answer the following questions :

1 ***Choose the correct answer :***

(a) an odd number + an even number = ... number.

(odd ***or*** even ***or*** prime)

(b) The number of axes of symmetry of the square = ...

(0 ***or*** 2 ***or*** 3 ***or*** 4)

(c) The area of a rhombus whose diagonals lengths are 4 cm. and 10 cm. is cm^2.

(40 ***or*** 80 ***or*** 20 ***or*** 10)

(d) The value of x when $x + 1 = 3$ the value of x when $2x = 6$

(> ***or*** = ***or*** <)

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Final Examinations

2 ***Complete the following :***

(a) The multiplicative identity element in $\mathbb{N}$ is

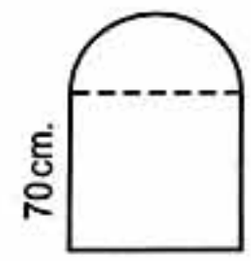
(b) The perimeter of a rectangle is 20 cm. If its length is x cm. , then its width = ... cm.

(c) If : A (4 , 5) and C (4 , 12) then the length of $\overline{AC}$ = ... length unit.

(d) $E \cap P$ = ... where E is the set of even numbers and P is the set of prime numbers.

3 ***In the opposite figure :***

There is a window which has the form of a square whose side length is 70 cm. and above it , there is a semicircle calculate.



(a) The perimeter of the window.

(b) If the area of the window is 6825 cm^2. , then find the area of the semicircle.

4 (a) ***Use the properties of addition to find the value of :*** 38 + 47 + 62 + 53

(b) ***Solve the following equation :*** $x + 45 = 75$ (where $x \in \mathbb{N}$)

5 (a) ***In coordinate plane :***

Draw the triangle ABC where A (1 , 3) , B (4 , 1) , C (4 , 7) , then draw the image of triangle ABC by reflection in $\overleftrightarrow{BC}$

(b) ***Represent the following distribution by frequency polygon :***

Sets	0 –	4 –	8 –	12 –	16 –
Frequency	6	10	12	5	3

Model 13

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\left\{\frac{1}{2}, 1, 2\right\}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) Double the number x subtracted 7 from it equals

($x-7$ *or* $2x-7$ *or* $7x+2$ *or* $14x$)

(c) The number of axes of symmetry of parallelogram = ...

(0 *or* 1 *or* 2 *or* 4)

(d) $39 \times 115 = 39 \times 100 + 39 \times$ (115 *or* 10 *or* 5 *or* 15)

2 ***Complete the following :***

(a) 3 , 9 , 27 , ... , ... (in the same pattern)

(b) The sum of two numbers is 35 , one of them is x , then the other is

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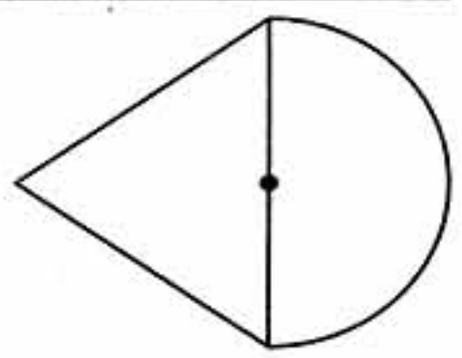


(c) The area of the rhombus whose side length = 10 cm. and its height is 9.6 cm. = ... cm^2.

(d) The opposite geometric transformation is



3 (a) The opposite figure is made up of an equilateral triangle of side length 7 cm. and a semicircle find its perimeter. $(\pi = \frac{22}{7})$



(b) A parallelogram has a base length of 8 cm. and a corresponding height of 5 cm. Find its area.

4 (a) ***Use the distribution property to find the value of :***

(1) 519×99 **(2)** 316×1001

(b) ***Solve each of the following equation :***

(1) $\frac{1}{5}x - 1 = 10$ **(2)** $5x + 1 = 16$

5 (a) On coordinate plane draw the rectangle ABCD where A (0 , 1) , B (3 , 1) , C (3 , 5) and D (0 , 5) , then draw its image by reflection in $\overleftrightarrow{BC}$

(b) ***The following table shows the marks of 40 pupils in mathematics exam :***

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	A	7	40

(1) Find the value of A

(2) Draw the frequency histogram and the frequency polygon which represent these data.

Model 14

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\mathbb{N} - C$ = ... ($\{1\}$ *or* $\{0\}$ *or* $\mathbb{N}$ *or* $\varnothing$)

(b) The difference between two numbers is 5 , the smaller one is y , then the greater number is

(5 y *or* 5 – y *or* y – 5 *or* y + 5)

(c) The number of axes of symmetry of a scalene triangle = ...

(0 *or* 1 *or* 2 *or* 3)

(d) $\left(\frac{1}{2} + 1\frac{1}{2}\right)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

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2 ***Complete the following :***

(a) If : (4 , a) = (2 b , 6) , then a = ... , b = ...

(b) If : $15 - x = 9$, then x = ...

(c) $\frac{\text{The circumfereuce of the circle}}{\text{The length of its diameter}}$ = ...

(d) If : $86 \times 15 = 86 \times x + 86 \times 10$, then x = ...

3 (a) ***Using the properties of operations in $\mathbb{N}$ to find the result of the following (write the used property)***

(1) 612 + 154 + 88 + 846 **(2)** $125 \times 19 \times 8$

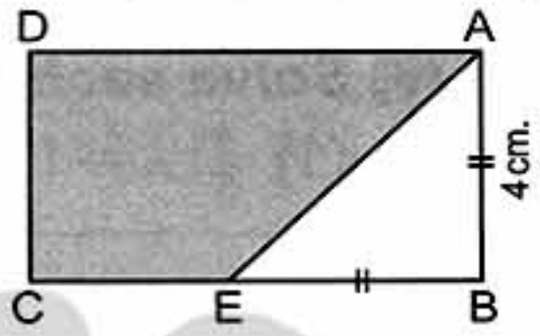
(b) ***Solve the equation :*** $2x - 4 = 8$ where $x \in \mathbb{N}$

4 (a) ***In the opposite figure :***

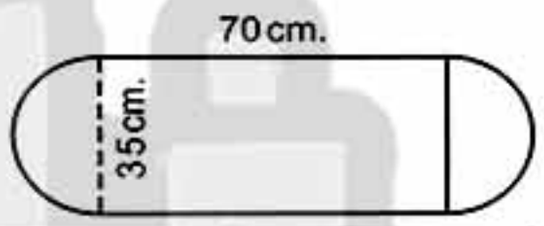
ABCD is a rectangle its area = 32 cm^2.

, AB = BE = 4 cm.

Find the area of the shaded part



(b) Find the perimeter of the opposite figure $\left(\pi = \frac{22}{7}\right)$



5 (a) In coordinate plane draw the figure ABCD in which A (4 , 5) , B (1 , 1) , C (4 , 1) and D (7 , 5)

(1) What is the name of the figure ABCD and calculate its area.

(2) Draw the image of the figure ABCD by reflection in $\overleftrightarrow{CA}$

(b) ***An employee spends his salary as follows :***

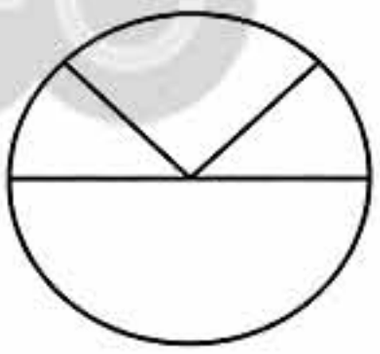
L.E. 200 for clothes.

L.E. 800 for food.

L.E. 400 for transportation and medicine.

L.E. 200 for renting an apartment.

Graph that data on the opposite circle.



Model 15

Answer the following questions :

1 ***Choose the correct answer :***

(a) The set of even numbers (E) ∪ the set of odd numbers (O) = ...

(P ***or*** O ***or*** E ***or*** $\mathbb{N}$)

(b) If : $6x = 66$, then x = ... (6 ***or*** 11 ***or*** 6.6 ***or*** 60)

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(c) If : (2 , 5) = (2 + x , 5) , then x = ... (0 **or** 1 **or** 2 **or** 3)

(d) (x – 10) (x – 9) where x is a natural number more than 12

(> **or** < **or** = **or** ≥)

2 ***Complete the following :***

(a) The additive identity in $\mathbb{N}$ is but the multiplicative identity is

(b) If we add 2 to three times the number y , then we shall get the number

(c) The coordinates of the midpoint of a line segment which its end points are (6 , 8) and (4 , 8) are

(d) The square whose area is 24.5 cm^2 the length of its diagonal = ... cm.

3 (a) ***Write a real life situation that can be represented by the equation $x + 5 = 12$, then solve for x***

(b) Find by using the properties of oddation and multiplication the result of : 99 × 15

4 (a) ***Which is greater in area :***

a garden of a shape of a triangle with base 8 m. and corresponding height 7 m. or a land in a shape of a rhombus of side length 5 m. and its height 10 m.

(b) If the circumference of a circle = 88 cm. Find the length of its diameter.

5 (a) On coordinate draw Δ ABC where A (0 , 3) , B (2 , 0) , C (2 , 5) , then draw its image by reflection in $\overleftrightarrow{BC}$

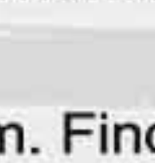
(b) ***The following frequency distribution shows the marks of a group of students in an exam :***

Sets	5 –	10 –	15 –	20 –	25 –	30 –	35 –	**Total**
Number of students	3	6	8	12	10	6	5	**50**

(1) What is the number of students who got 30 marks or more.

(2) Draw the frequency polygon for that distribution.

Model 16



Answer the following questions :

1 ***Choose the correct answer :***

(a) (x + 15) (x + 17) , $x \in \mathbb{N}$ (> **or** < **or** = **or** ≥)

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(b) Sarah saved L.E. x and her father gave her L.E. 5 she will have
($5x$ **or** $x+5$ **or** $x-5$ **or** $\frac{x}{5}$)

(c) If : A (2 , 3) , B (2 , 5) , then the length of $\overline{AB}$ = ... length unit.
(3 **or** 5 **or** 2 **or** 1)

(d) If the set of even numbers is E , then E $\mathbb{N}$
($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

2 ***Complete the following :***

(a) If : $X = \{x : x \in \mathbb{N} , 1 \leq x < 5\}$, then X = { }

(b) If : $3x = 15$, $x \in \mathbb{N}$, then x = ...

(c) The area of the rhombus whose side length = 10 cm. and its height is 9.6 cm. equals cm^2.

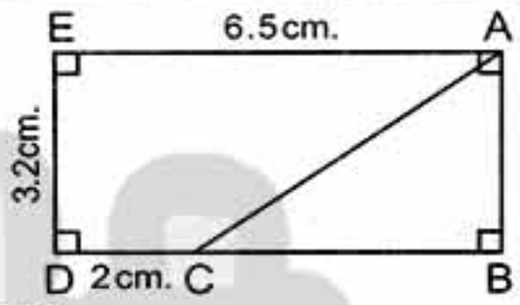
(d) The type of the opposite geometric transformation is



3 (a) ***In the opposite figure :***

ABDE is a rectangle , $C \in \overline{BD}$

Find the area of ΔABC



(b) Find the area of a rhombus with diagonal length 7 cm. and 9 cm. and if its height is 5 cm. Find its side length.

4 (a) ***Use the proporties to find the value of :*** 48 + 637 + 52 + 363

(b) ***Solve the equation :*** $\frac{1}{3}x - 1 = 3$, $x \in \mathbb{N}$

5 (a) ***On the coordinate plane :*** Draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of triangle ABC by reflection in $\overleftrightarrow{BC}$.

(b) ***The following table shows the recorded temperatures in 40 cities on a day :***

Temperatures	20 –	22 –	24 –	26 –	28 –	**Total**
Number of cities	7	9	11	8	5	**40**

Required :

(1) The number of cities with temperatures less than 24 degrees Celsius.

(2) Draw each of the histogram and the frequency polygon.

Model 17

Answer the following questions :

1 ***Choose the correct answer :***

(a) The least prime number × any prime number = ... number.
(odd **or** even **or** prime)

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(b) The number of axes of symmetry of the parallelogram = ...
(zero **or** 1 **or** 2 **or** 4)

(c) Subtracting 3 from double of the number x = ...
($x-3$ **or** $2x-3$ **or** $3x+2$ **or** $5x$)

(d) $(4 \times \ldots\ldots) \times 78 = 7800$ (5 **or** 25 **or** 50 **or** 125)

2 ***Complete the following :***

(a) If : $945 = (x \times 100) + 45$, then x = ...

(b) If : $\left(\frac{1}{2}\ x\ , 3\right) = (2\ , y)$, then x = ... , y = ...

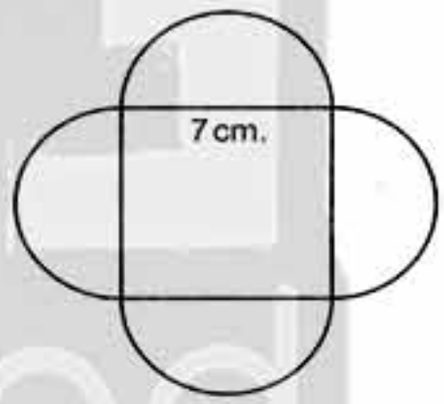
(c) A rhombus of area 48 cm^2 , its height = 4.8 cm.
, then its perimeter = ... cm.

(d) The lengths of two adjacent sides of a parallelogram are x and y ,
then its perimeter = ...

3 (a) Write by the list method the set $X = \{x : x \in \mathbb{N}\ , 2 \leq x < 7\}$
, then represent its elements on the number line.

(b) ***Solve the equation :*** $2x + 5 = 17$, $x \in \mathbb{N}$

4 (a) Find the perimeter of
the opposite figure.



(b) Find to the nearest hundredth the area of
a parallelogram whose base length is 34.75 cm.
and its corresponding height 28.17 cm.

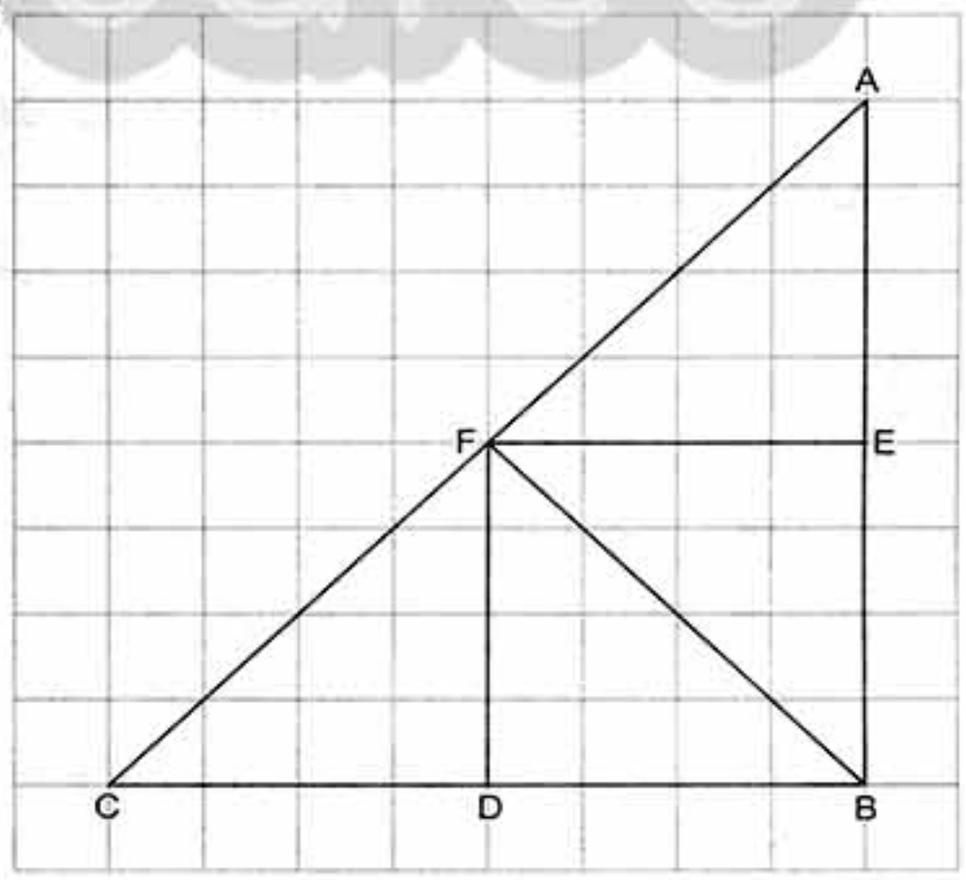
5 (a) ***In the opposite figure complete :***

(1) Δ BEF is the image
of Δ AEF by reflection
across ↔

(2) Δ BDF is the image
of Δ CDF by reflection
across ↔

(3) Δ ABF is the image
of Δ CBF by reflection
across ↔

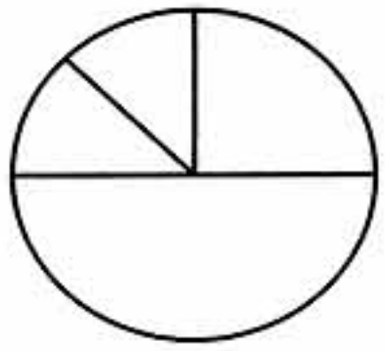
(4) Δ BEF is the image
of Δ BDF by reflection
across ↔



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(b) An employee spends his monthly salary as follow 1000 pounds for food. , 500 pounds for clothes , 250 the rent of the flat and 250 other spending. Represent these data on the shown circular sectors.



Model 18

Answer the following questions :

1 ***Choose the correct answer :***

(a) $(0.3 + 2.7)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) If : $(3 , x - 2) = (3 , 7)$, then x = ... (7 *or* 9 *or* 5 *or* 3)

(c) If : $x + 2 = 5$, $x \in \mathbb{N}$, then x = ... (2 *or* 3 *or* 5 *or* 4)

(d) $\mathbb{N} - E$ = ... ($\mathbb{N}$ *or* O *or* E *or* P)

2 ***Complete the following :***

(a) The multiplicative neutral element in natural numbers plus 9 = ...

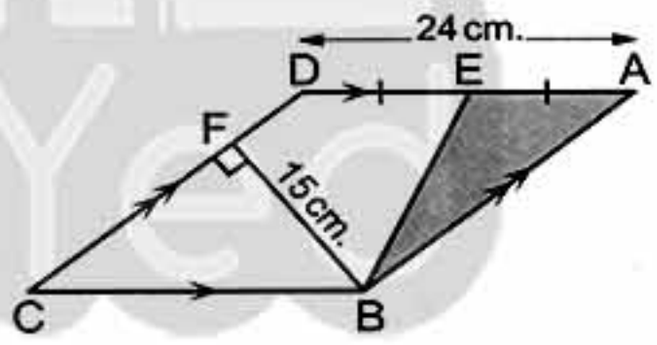
(b) If : $15 \times 34 = (5 + 10) \times x$, then x = ...

(c) The number of axes of symmetry of square = ...

(d) The length of the base of a triangle whose area is 240 cm^2 and its height = 10 cm is

3 ***In the opposite figure :***

ABCD is a parallelogram in which AD = 24 cm. , E is the midpoint of $\overline{AD}$, BF = 15 cm. , the area of Δ ABE = 60 cm^2



Find :

(1) The area of the parallelogram ABCD

(2) The length of $\overline{AB}$

(3) The perimeter of the parallelogram ABCD

4 (a) Using the properties of operations in $\mathbb{N}$ to find the result of each of the following.

(1) $(64 + 135 + 36 + 65) \times 17$ **(2)** $84\ (25 \times 4 + 125 \times 8)$

(b) ***Solve the equation :*** $3x + 8 = 29$

5 (a) In a coordinate plane. Represent the points A (2 , 3) , B (3 , 5) and C (5 , 3) , then find the image of Δ ABC by reflection in $\overleftrightarrow{AC}$

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موقع ذاكرولى التعليمى
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(b) ***A librarian made an inventory of the books in his library and their types. He found the following :*** $\frac{1}{4}$ of the books are religious, $\frac{1}{4}$ of the books are literary , $\frac{1}{2}$ of the books are scientific.
Graph that given data using a pie graph. If the total of books was 800
Find the number of each type of books.

Model 19

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\{2 , 7\}$ $\mathbb{N}$. ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The area of the largest rectangle whose perimeter is 24 cm. = ... cm^2.
(32 *or* 36 *or* 72 *or* 144)

(c) If the side length of a rhombus is x , its perimeter is P , the mathematic relation between x and P is x = ...
(4 P *or* P + 4 *or* P ÷ 4 *or* P – 4)

(d) The type of the opposite transformation is 
(translation *or* reflection *or* rotation)

2 ***Complete the following :***

(a) The smallest natural number is

(b) Odd number + even number = ... number.

(c) If : (4 , 7) = (2 a , b – 1) , then a = ... , b = ...

(d) If : $(x + 2) \times 15 = 8 \times 15$, then x = ...

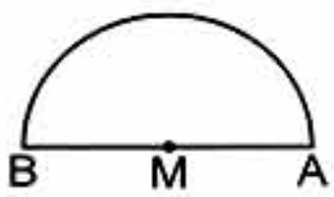
3 **(a)** The lengths of the diagonals of a rhombus are 12 cm. and 16 cm. and its height is 9.6 cm. Find its side length.

(b) Use the properties of operations in $\mathbb{N}$ to find the value of.

(1) $25 \times 38 \times 4$ **(2)** $44 + 66 + 56 + 34$

4 **(a)** Zahraa saved 14 pounds , she bought 3 notebooks of x pound for each. The remainder with her was 8 pounds. Express these situations by an equation.

(b) Calculate the perimeter of the opposite figure where AM = 35 cm. $\left(\pi = \frac{22}{7}\right)$



5 **(a)** ***On the coordinate plane :***
Graph the points (4 , 3) , (4 , 9) , (7 , 9) and (7 , 3) join them in the same order and name the figure you obtained.

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Final Examinations

(b) *Represent the following distrbution by frequency polygon :*

Sets	0 –	2 –	4 –	6 –	8 –
Frequency	3	7	8	9	2

Model 20

Answer the following questions :

1 ***Choose the correct answer :***

(a) The number of axes of symmetry of square = ... (0 **or** 1 **or** 2 **or** 4)

(b) If : $x + 3 = 5$, $x \in \mathbb{N}$, then x = ... (1 **or** 2 **or** 3 **or** 4)

(c) If we multiply the number x by 7 , then we subtract from the result 3 we shall get ($7x + 3$ **or** $3x + 7$ **or** $7x - 3$ **or** $x - 21$)

(d) 1 , 4 , 9 , 16 , ... (23 **or** 24 **or** 25 **or** 20)

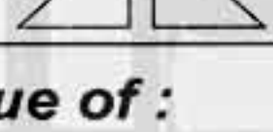
2 ***Complete the following :***

(a) The circumference of a circle with radius lengths 10 cm. is π cm.

(b) If : $x = \{x : x \in \mathbb{N} , 2 \leq x < 7\}$, then x = { }

(c) The least natural number is

(d) The type of the opposite transformation is



3 (a) ***Use the properties of addition to find the value of :***

38 + 47 + 62 + 53

(b) ***Which is greater in area ?***

Triangle whose base length 18 cm. and its height 12 cm. or rhombus with diagonals lengths 24 cm. and 8 cm.

4 (a) Find the radius length of circle which its circumference = 88 cm. $\left(\pi = \frac{22}{7}\right)$

(b) ***Solve the equation :*** $3x + 5 = 26$

5 (a) ***In coordinate plane :***

Draw the triangle ABC where A (1 , 3) , B (4 , 1) , C (4 , 7) , then draw the image of triangle ABC by reflection in $\overleftrightarrow{BC}$

(b) ***The following table represents the marks of pupils in maths test , represent these data by a frequency polygon.***

Sets	5 –	10 –	15 –	20 –	25 –
Frequency	5	10	17	7	2

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Final Examinations

Model 21

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\{2 , 3 , 0.3\}$ $\mathbb{N}$ ($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

(b) $\mathbb{N} - E =$ (E *or* O *or* P *or* $\mathbb{N}$)

(c) The number of axes of symmetry of the rectangle = ...
(0 *or* 1 *or* 2 *or* 4)

(d) If : $x - 3 = 7$, $x \in \mathbb{N}$, then $x =$ (4 *or* 3 *or* 10 *or* 21)

2 ***Complete the following :***

(a) The width of a rectangle is x cm. its length is longer than twice its width by 3 cm. , then the length of the rectangle is cm.

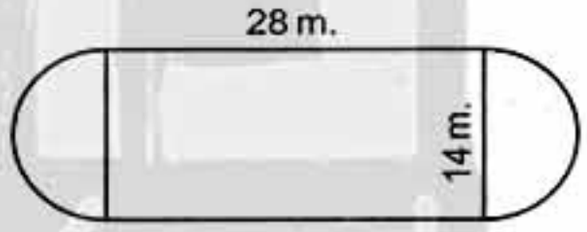
(b) The number 5 lies on the right of the number directly and on the left of the number

(c) The area of a rhombus whose diagonals are 6 cm. and 8 cm. is cm^2.

(d) If : A (5 , 7) and B (3 , 7) , then C (..... , ...) is the midpoint of $\overline{AB}$

3 (a) The opposite figure shows a football playground.

Find the distance around the figure when $\pi = \frac{22}{7}$



(b) ***Use operations propertes in $\mathbb{N}$ to calculate :*** $25 \times 781 \times 4$

4 (a) ***Solve these equations :***

(1) $k - 72 = 72$ **(2)** $6n = 48$

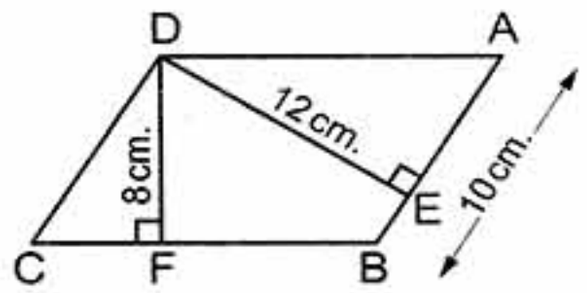
(b) ***In the opposite figure :***

ABCD is a parallelogram in which

AB = 10 cm. , DE = 12 cm. , DF = 8 cm.

Find : (1) The area of the parallelogram ABCD

(2) The length of $\overline{BC}$



5 (a) ***In the two dimensions cartesion coordinates :***

Determine the points A (2 , 5) , B (5 , 2) and C (5 , 8) , then find the length of $\overline{BC}$ by measuring.

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Final Examinations

(b) ***The following table shows the marks of 40 pupils in mathematics exam.***

(1) Find the value of A.

(2) Draw the frequency histogram and frequency polygon which represent these data.

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	6	5	12	A	9	40

Model 22

Answer the following questions :

1 ***Choose the correct answer :***

(a) $(5 - 7)$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The least prime number × any prime number = ... number.
(odd *or* even *or* prime *or* otherwise)

(c) Twice the number y subtracted from it 4 the symbolic expression for this situation is ($y - 4$ *or* $2y - 4$ *or* $y + 4$ *or* $2y + 4$)

(d) The type of the opposite transformation is
(rotation *or* translation *or* reflection)

2 ***Complete the following :***

(a) If : A (3 , 7) and B (5 , 7) , then AB = ... length unit.

(b) If : x is an odd number , then $x + 2$ is number.

(c) The circumference of a circle with diameter 21 cm. is $\left(\pi = \frac{22}{7}\right)$

(d) The perimeter of the equilateral triangle whose side length is ℓ cm. = ...

3 (a) ***Using the properties of commutation , distribution and association. Find the value of each of the following :***

(1) $8 \times 731 \times 125$ **(2)** $28 + 59 + 72$

(b) ***The age of a man now x years where $x \in \mathbb{N}$ Find :***

(1) The age of the man after 9 years.

(2) The age of the man since 8 years.

4 In 2-dimensional coordinate plane locate the points A (2 , 0) , B (4 , 0) , C (0 , 5) and D (0 , 3). Find the area of the shape ABCD

5 (a) If the area of the square = 72 cm^2. Find the length of its diagonal.

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(b) *Represent the following distribution by frequency polygon :*

Sets	0 –	4 –	8 –	12 –	16 –
Frequency	7	3	10	12	4

Model 23

Answer the following questions :

1 *Choose the correct answer :*

(a) The set of even numbers the set of natural numbers.

($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

(b) If x is an odd number , then $x + 3$ is number.

(odd *or* even *or* prime)

(c) The number of axes of symmetry of the rhombus equals

(zero *or* 1 *or* 2 *or* 4)

(d) If : $x = \{x : x \in \mathbb{N} , 2 \leq x < 4\}$, then x = ...

($\{3\}$ *or* $\{2 , 3\}$ *or* $\{2 , 3 , 4\}$ *or* $\{2\}$)

2 *Complete the following :*

(a) The least number in the set of counting numbers is

(b) The sum of two numbers is 20 one of them is x , then the other = ...

(c) If : A (2 , 3) and B (2 , 7) the length of $\overline{AB}$ = ... length unit.

(d) The area of the square = $\frac{1}{2}$ ×

3 (a) *Which is greater in area ?*

The triangle whose base length is 12 cm. and its corresponding height = 8 cm. or the parallelogram in which the length of the base = 10 cm. and its corresponding height = 5 cm.

(b) *Solve the following equation :*

(1) $x + 3 = 17$ $x \in \mathbb{N}$

(2) $2x + 7 = 23$ $x \in \mathbb{N}$

4 (a) *Use the properties of operation in $\mathbb{N}$ to find the result of each (write the used property)*

(1) 156 + 871 + 344 + 129 **(2)** 27 (25 × 4 + 125 × 8)

(b) A jam jar has form of a cylinder its base is a circle with diameter lengths 7 cm. Find the circumference of its flat base.

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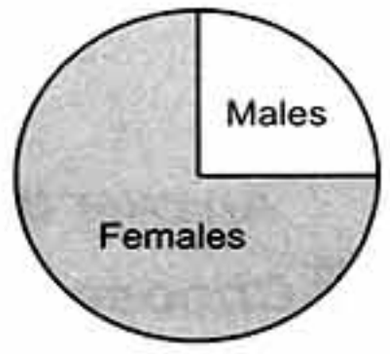
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Final Examinations

5 (a) ***In the coordinate plane :***

Draw the triangle ABC in which A (5 , 5) , B (2 , 5) and C (3 , 7) , then draw the image of triangle ABC by reflection in $\overleftrightarrow{AB}$

(b) 220 candidates have applied for a test to hire male and female anchor persons in the televison. If the opposite pie graph represents the given data ; what is the number of female candidates who applied for that test ?



Model 24

Answer the following questions :

1 ***Choose the correct answer :***

(a) $(x - 10)$ $(x - 9)$ where x is a natural number more than 17

(> ***or*** < ***or*** = ***or*** ≥)

(b) The type of the opposite transformation is

(reflection ***or*** rotation ***or*** translation)

(c) The number of axes of symmetry of the parallelogram = ...

(0 ***or*** 1 ***or*** 2 ***or*** 4)

(d) If : $x - 3 = 5$, $x \in \mathbb{N}$, then x = ... (8 ***or*** 2 ***or*** 6 ***or*** 7)

2 ***Complete the following :***

(a) If : $945 = (x \times 100) + 45$, then x = ...

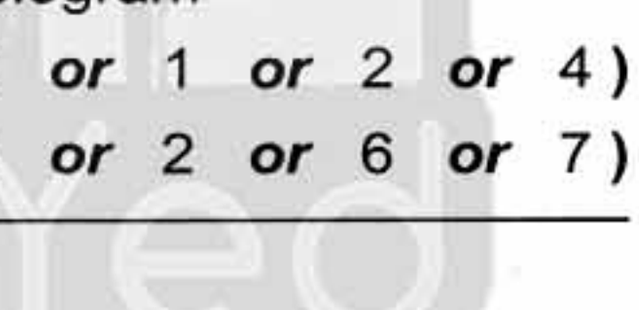
(b) If we subtract 8 from twice the number z , then we shall get the number

(c) $\dfrac{\text{The circumference of the circle}}{\text{The length of its diameter}}$ = ...

(d) 1 , 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

3 (a) ***In the opposite figure :***

ABCD is a parallelogram in which AD = 18 cm. , CD = 12 cm. , $\overline{DF} \perp \overline{BC}$, DF = 10 cm. and $\overline{DE} \perp \overline{AB}$, calculate the length of $\overline{DE}$



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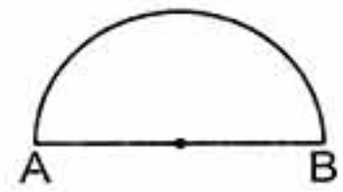
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(b) ***In the opposite figure :***

The length of the diameter $\overline{AB}$ of a semicircle is 14 cm.

Find the distance around the figure $\left(\pi = \frac{22}{7}\right)$



4 (a) ***Use the properties of operations to find the result of :***

(1) 38 + 47 + 62 + 53 **(2)** 8 × 37 × 125

(b) ***Translate each verbal statement into an equations :***

(1) A number if added to 17 the sum is 28

(2) If 9 is subtracted from a number , then the result is 23

5 (a) Draw Δ ABC where A (2 , 5) , B (5 , 2) and C (5 , 8) , then find its image by reflection a cross $\overleftrightarrow{BC}$

(b) ***Represent the following distribution by frequency polygon :***

Sets	5 –	7 –	9 –	11 –	13 –
Frequency	4	12	10	7	8

Model 25



Answer the following questions :

1 ***Choose the correct answer :***

(a) If : E is the set of even numbers , then E $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The multiplicative identity element in $\mathbb{N}$ is

(0 *or* 1 *or* 2 *or* 4)

(c) The sum of any two natural numbers $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(d) The number of axes of symmetry of an isosceles triangle = ...

(0 *or* 1 *or* 2 *or* 3)

2 ***Complete the following :***

(a) If : A (2 , 5) and B (4 , 5) , then the midpoint of $\overline{AB}$ is the point (..... , ...)

(b) If : $3x = 21$, then x = ...

(c) Double the number x subtracted 8 from it equals

(d) The square whose area is 32 cm^2 the length of its diagonal = ... cm.

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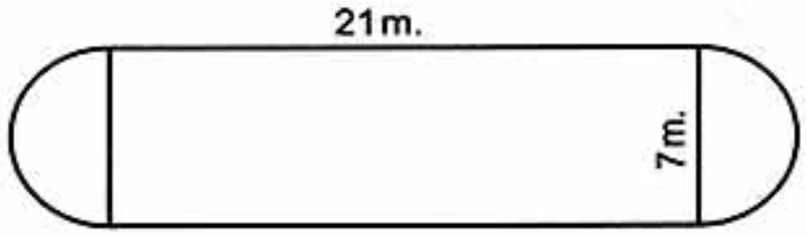
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Final Examinations

3 (a) ***Use the commutative and associative property to find the value of :*** $4 \times 72 \times 25$

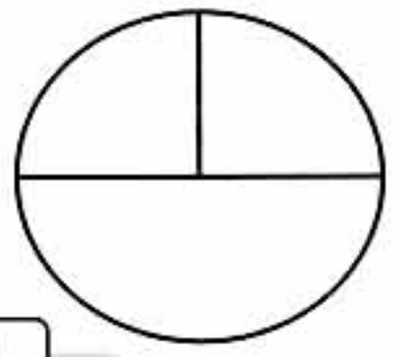
(b) Graph the figure ABCD where A (2 , 8) , B (3 , 4) , C (8 , 4) and D (7 , 8) what is the name of the figure ABCD ?

4 The opposite figure shows a football playground find the distance around the figure when $\left(\pi = \frac{22}{7}\right)$



5 (a) ***Solve the equation :*** $\frac{1}{3}x - 2 = 8$

(b) ***The following table shows the number of students who practice sports. Represent these data using pie graph on the opposite figure :***



Game	Football	Basketball	Volleyball
Number	20	10	10

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Some Schools' Examinations from Different Governorates

1 Cairo Governorate

Western Cairo Educational Zone
City Language School

Answer the following questions :

1 ***Choose the correct answer :***

[a] If $x + 8 = 15$, $x \in \mathbb{N}$, then x = ...

(3 **or** 7 **or** 6 **or** 5)

[b] The number of axes of symmetry of the rhombus

(1 **or** 2 **or** 3 **or** 4)

[c] If $2x = 6$, then x = ... (5 **or** 1 **or** 4 **or** 3)

[d] The area of a triangle whose base length is 10 cm. and the corresponding height is 5 cm. = ... cm^2

(50 **or** 15 **or** 25 **or** 5)

2 ***Complete the following :***

[a] $7 \times 15 = 15 \times a$, then a = ...

[b] The sum of two numbers is 21 one of them x , then the other = ...

[c] The perimeter of the square whose side length is L cm. = ... cm.

[d] The area of the parallelogram = ... ×

3 [a] Solve the following equation :

$3x - 5 = 10$, $x \in \mathbb{N}$

[b] ***Complete :*** Twice the number x subtracted 8 from it = ...

4 [a] The square whose diagonal length is 6 cm. Find its area.

[b] In the orthogonal Cartesian co-ordinates determine the points A (2 , 5) , B (5 , 2) and C (5 , 8) , then draw its image by reflection in $\overleftrightarrow{BC}$

5 [a] The circle whose diameter length is 14 cm.

Find its circumference. $\left(\pi = \frac{22}{7}\right)$

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[b] ***The following table shows the frequency distribution of the number of work hours of 50 worders :***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represent these data.

Additional question

Choose the correct answer :

[a] If $X = \{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then $x =$ ($\{3\}$ **or** $\{4\}$ **or** $\{3 , 4\}$ **or** $\{3 , 4 , 5\}$)

[b] 25 $\mathbb{N}$ ($\subset$ **or** $\not\subset$ **or** $\notin$ **or** $\in$)

[c] The smallest natural number is (0 **or** 1 **or** 2 **or** 3)

[d] $(8 \times 3) \times 5 =$ $\times (3 \times 5)$ (3 **or** 5 **or** 8 **or** 35)

2 Cairo Governorate

Rod El-Farag Educational Zone
St. Mary's School

Answer the following questions :

1 ***Choose the correct answer :***

[a] The number of lines of symmetry of a rectangle is (0 **or** 2 **or** 3 **or** 4)

[b] The area of a rhombus whose diagonals 10 cm. , 20 cm. is cm^2 (400 **or** 300 **or** 200 **or** 100)

[c] If the side length of a square is x and its perimeter is P , then P = ... ($4x$ **or** $x + 4$ **or** $x - 4$ **or** $4 - x$)

[d] The area of a square whose diagonal length 6 cm. is cm^2 (18 **or** 36 **or** 12 **or** 24)

2 ***Complete :***

[a] If the diameter of a circle is 14 cm. , $\pi = \frac{22}{7}$, then its circumference = ... cm.

[b] The number of axes of symmetry of the rhombus equals

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[c] If $x + 3 = 12$, then x = ...

[d] Shorouk saved L.E. y and her father gave her L.E. 12 , then she has L.E.

3 [a] ***In the opposite figure :***

Find the perimeter of the figure where $\pi = \frac{22}{7}$



[b] Ahmed has L.E. x , Samir has L.E. 10 and the sum of what Samir has and the twice of what Ahmed has is L.E. 24 Write an equation to represent this situation and find the value of x

4 [a] In square shaped piece of land with diagonal length 28 m., a square shaped house with side length 15 m. has been built on it and the left part was used as a garden. find the area of the garden.

[b] In a 2-dimensional coordinate plan , draw Δ ABC where A (2 , 5) , B (5 , 2) and C (5 , 8) , then find its image by reflection across $\overleftrightarrow{BC}$

5 [a] ***Which is greater in area ?*** A triangle whose base length = 9 cm. and height = 8 cm. or parallelogram in which the length of the base = 8 cm. and its height = 6 cm.

[b] ***The following table shows the daily wages of workers in a company :***

Sets	20 –	30 –	40 –	50 –	60 –	Total
Frequency	8	10	16	12	4	50

Draw the frequency histogram and frequency polygon which represent these data.

Additional question

Complete :

[a] The multiplicative neutral element in $\mathbb{N}$ is

[b] The sum of two odd numbers is number.

[c] 1 , 4 , 8 , 13 , ... , ... (in the same pattern)

[d] $74 \times (73 + 27) = 74 \times$ = ...

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3 Cairo Governorate

El-Zeitoun Educational Zone
El-Ma'aref Modern Lang. School

القاهرة

Answer the following questions :

1 ***Choose the correct answer :***

[a] Subtracting 3 from double of the number x = ...

($x-3$ *or* $2x-3$ *or* $3x+2$ *or* $5x$)

[b] If $x + 3 = 12$, then the value of x = ...

(12 *or* 4 *or* 15 *or* 9)

[c] The area of a square whose diagonal length is 8 cm. = ... cm^2

(64 *or* 32 *or* 16 *or* 8)

[d] Circumference of the circle = ...

(πr^2 *or* $2\pi r^2$ *or* $\frac{1}{2}\pi r^2$ *or* $2\pi r$)

[e] The number of symmetry axes of an equilateral triangle = ...

(0 *or* 1 *or* 2 *or* 3)

2 ***Complete :***

[a] A rhombus of area 48 cm^2 , its height = 4.8 , then its perimeter = ... cm.

[b] If $7 \times 15 = 15 \times x$, then x = ...

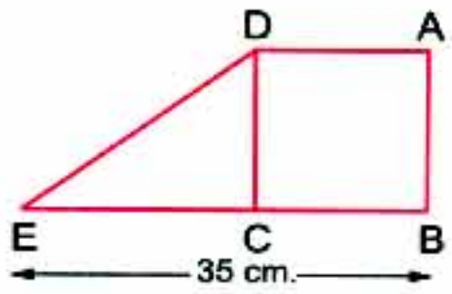
[c] The sum of two numbers is 35, one of them is x , then the other is

[d] The square whose perimeter is 32 cm. , its area = ... cm^2

[e] The base length of a triangle is 8 cm. and its height 5 cm. , then its area = ... cm^2

3 **[a]** ***In the opposite figure :***

ABCD is a square , its perimeter is 60 cm. , $E \in \overrightarrow{BC}$ and BE = 35 cm.
Find the area of the figure ABED



[b] ***Solve the equations :***

(1) $3x + 8 = 29$ **(2)** $\frac{1}{3}x + 8 = 10$

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
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موقع ذاكرولى التعليمى
الصف الخامس الابتدائى

Final Examinations

4 **[a]** ***Which is greater in area ?***

A rhombus in which the lengths of its diagonals 6 cm. , 8 cm.
or a parallelogram whose base length is 7 cm. and height 4 cm.

[b] In the orthogonal Cartesian-coordinates locate the points
A (8 , 2) , B (3 , 2) , C (3 , 6) , D (8 , 6) then complete :

(1) The length of AB = ... units, the length of BC = ... units.

(2) The figure ABCD is

(3) The perimeter of the figure ABCD = ... units.

5 ***The following table shows the daily wages of workers in a company :***

Sets	20 –	30 –	40 –	50 –	60 –	**Total**
Frequency	8	10	16	12	4	**50**

Draw the frequency histogram and frequency polygon which represent these data.

Additional question

Use the commutative , associative properties to simplify finding the result of :

(1) 98 + 175 + 102 **(2)** 4 × 175 × 25

4 Cairo Governorate

El-Nozha Directorate of Education
Our Lady of Perpetual Succour School

Answer the following questions :

1 ***Choose the correct answer :***

[a] If $x + 7 = 19$, $x \in \mathbb{N}$, then x = ...

(26 *or* 12 *or* 11 *or* 13)

[b] If the longest chord in a circle is 7 cm. , then the circumference of the circle is cm. where $\left(\pi = \frac{22}{7}\right)$

(3.5 *or* 7 *or* 22 *or* 44)

[c] A rhombus in which the lengths of its diagonals are 10 cm., and 12 cm.
Its area = ... cm^2 (120 *or* 60 *or* 24 *or* 32)

[d] Twice the number x subtracted 7 from it = ...

($7 - x$ *or* $2x - 7$ *or* $7x + 2$ *or* $14x$)

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
كتاب المعاصر موقع ذاكرولى التعليمى الصف الخامس الابتدائى

2 ***Complete the following :***

[a] The number of axes of symmetry of the rhombus = ...

[b] If $3x = 15$, $x \in \mathbb{N}$, then x = ...

[c] The length of the diagonal of a square with area 18 cm^2 = ...

[d] A parallelogram in which the lengths of two adjacent sides are 5 cm. and 7 cm., the length of the smaller height = 4 cm. , then its area = ... cm^2

3 **[a]** ***Which is greater in area ?***

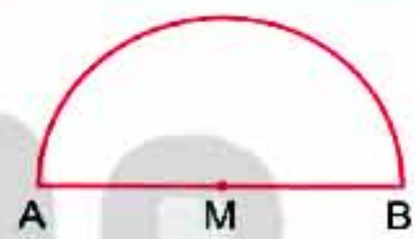
A square whose diagonal length is 10 cm. or a right - angled triangle in which the lengths of the sides of the right angle are 8 cm. and 15 cm.

[b] Solve : $2x + 9 = 21$, $x \in \mathbb{N}$

4 **[a]** ***In the opposite figure :***

The length of the diameter $\overline{AB}$ of a semicircle is 14 cm.

Find the distance around the figure $\left(\pi = \frac{22}{7}\right)$



[b] Draw the triangle ABC where A (2 , 5) , B (5 , 2) and C (5 , 8) , then find its image by reflection across $\overleftrightarrow{BC}$

5 **[a]** If the area of a rhombus is 30 cm^2 and the length of one of its diagonals is 6 cm. Find the length of the other diagonal.

[b] ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Sets	4 –	6 –	8 –	10 –	**Total**
Frequency	12	8	16	14	**50**

Draw the frequency histogram which represents these data.

Additional question

Complete :

[a] The set $\{a : a \in \mathbb{N} , a < 4\}$ in the listing method = ...

[b] The property used in : $a \times (b \times c) = (a \times b) \times c$ is

[c] The additive neutral element in $\mathbb{N}$ is

[d] 1 , 2 , 3 , 5 , 8 , ... , ... (in the same pattern)

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موقع ذاكرولى التعليمى
الصف الخامس الابتدائى

Final Examinations

5 Cairo Governorate

New Cairo Educational Zone
Akhnaton Egyptian College

Answer the following questions :

1 ***Complete :***

[a] If the long base of parallelogram is 8 cm., short base 5 cm. and its short height is 4 cm. , then its area = ... cm^2.

[b] The circumference of circle whose diameter length 7 cm. is cm. $\left(\pi = \frac{22}{7}\right)$

[c] The area of rhombus = $\frac{1}{2}$ × ×

[d] If $2x = 10$, then x = ...

[e] The polygon ABCD ≡ the polygon XYZL , then ∠ A ≡ ∠

2 ***Choose the correct answer :***

[a] If the circumference of a circle is 44 cm. , then its radius length = ... cm. (14 *or* 7 *or* 22)

[b] The triangle whose base length is 5 cm. , and the corresponding height of it is 6 cm. , its area = ... cm^2. (30 *or* 15 *or* 25)

[c] The area of the square with diagonal length 6 cm. is cm^2. (36 *or* 18 *or* 12)

[d] If $x + 8 = 15$, $x \in \mathbb{N}$, then x = ... (3 *or* 7 *or* 6)

[e] The shaded triangle is an image of the other triangle by (reflection *or* translation *or* rotation)

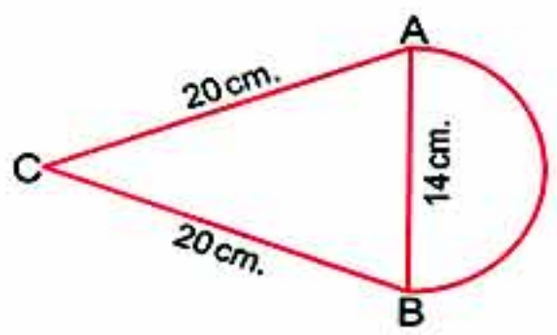
3 ***Solve the equations :***

[a] $2x + 9 = 21$, $x \in \mathbb{N}$

[b] $x - 5 = 2$, $x \in \mathbb{N}$

4 [a] In the Cartesian co-ordinates plane draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the triangle by reflection on $\overleftrightarrow{BC}$

[b] Calculate the perimeter of the opposite figure : $\left(\pi = \frac{22}{7}\right)$



هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

5 ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the histogram and the frequency polygon representing these data.

Additional question

Choose the correct answer :

[a] $(4 \times \ldots\ldots\ldots) \times 78 = 7800$ (5 **or** 25 **or** 50 **or** 125)

[b] If O is the set of odd numbers , E is the set of even numbers , then $O \cap E = \ldots\ldots\ldots$ ($\mathbb{N}$ **or** O **or** E **or** $\varnothing$)

[c] $(2 + 6) \ldots\ldots\ldots \mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

[d] c a on the number line (a, c) where a , c are two natural numbers.

(< **or** = **or** > **or** ≥)

Answer the following questions :

I ***Choose the correct answer :***

[a] If $x\,(75 + 10) = 9 \times 85$, then $x = \ldots\ldots\ldots$ (5 **or** 85 **or** 9 **or** 8)

[b] The number of axes of symmetry of the scalene triangle is (0 **or** 1 **or** 2 **or** 3)

[c] The length of the base of a triangle whose area is 240 cm^2 and its height is 10 cm. is cm. (4 **or** 12 **or** 48 **or** 240)

[d] Twice the number x subtracted 3 from it ($x - 3$ **or** $2x + 3$ **or** $2x - 3$ **or** $3 - 2x$)

2 ***Complete the following :***

[a] The square whose area is 72 cm^2 , the length of its diagonal = ... cm.

[b] If the age of a man now is x years, then his age after 7 years = ...

[c] If $5x - 7 = 33$, then $x = \ldots\ldots\ldots$

[d] The longest chord of a circle is 7 cm. the circumference = ... cm. where $\left(\pi = \frac{22}{7}\right)$

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Final Examinations

3 **[a]** A rhombus in which the lengths of its diagonals are 12 cm. , 16 cm. and the height is 9.6 cm. calculate its area and its side length.

[b] In the two dimensions Cartesian co-ordinates, determine the points A (2 , 5) , B (5 , 2) , C (5 , 8) , then :

(1) Find the length of $\overline{BC}$

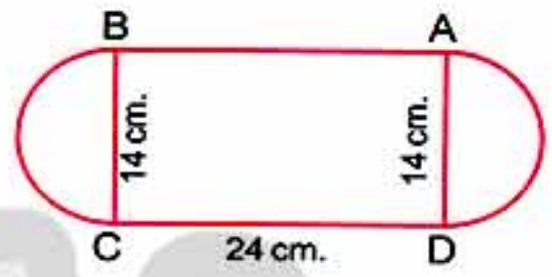
(2) Draw its image by reflection across $\overleftrightarrow{BC}$

(3) Calculate the area of Δ ABC

4 **[a]** Three times of a number x is 8 more than 1 , express it in an equation and solve it.

[b] Find the perimeter of the opposite figure :

Where $\left(\pi = \frac{22}{7}\right)$

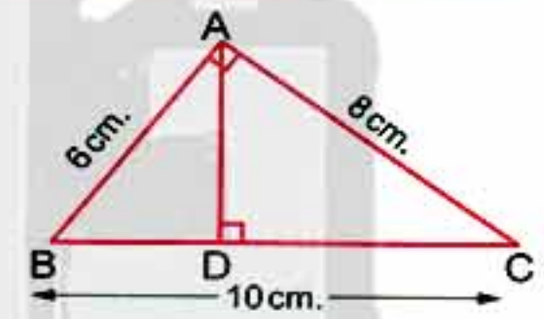


5 **[a]** ***In the opposite figure :***

ABC is a right-angled triangle

AB = 6 cm. , AC = 8 cm. and BC = 10 cm.

Find : **(1)** Area of Δ ABC **(2)** Length of $\overline{AD}$



[b] ***The following table shows the frequency distribution of the number of work hours of 50 works :***

Sets	2 –	4 –	6 –	8 –	10 –	Total
Frequency	8	9	15	16	2	50

Graph these data using the frequency polygon.

Additional question

Use the commutative and associative properties in $\mathbb{N}$ to calculate each of the following :

(1) 72 + 89 + 28 + 11 **(2)** 8 × 37 × 125

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

7 Giza Governorate — 6th October Language School

Answer the following questions :

1 ***Choose the correct answer :***

[a] Adding 8 to double x the symbolic expression is

($2x + 8$ **or** $8 - 2x$ **or** $x + 8$ **or** $8 + 3x$)

[b] The area of rhombus whose diagonals are of length 12 cm. and 16 cm.

= cm^2.

(56 **or** 28 **or** 96 **or** 129)

[c] Isosceles trapezium has line of symmetry.

(4 **or** 2 **or** 1 **or** 3)

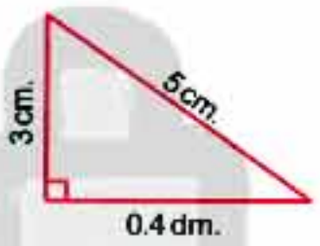
[d] The circumference of a circle whose diameter is 14 cm.

equals cm. $\left(\pi = \frac{22}{7}\right)$

(44 **or** 22 **or** 88 **or** 100)

[e] Area of the opposite triangle

is cm^2.



(12 **or** 24 **or** 43 **or** 6)

2 **[a]** ***Complete the following :***

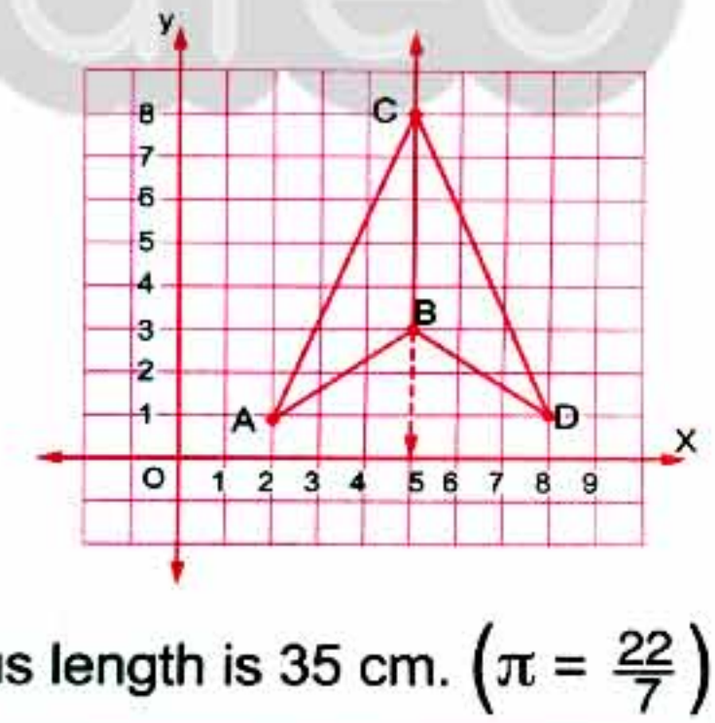
(1) The area of the square whose perimeter is 24 cm. equals cm^2.

(2) $5x = 10$, then x = ...

(3) Square has lines of symmetry.

(4) The image of Δ CAB

by reflection across $\overleftrightarrow{BC}$ is Δ



[b] Find the circumference of a circle whose radius length is 35 cm. $\left(\pi = \frac{22}{7}\right)$

3 ***Which is greater in area ?***

A square whose diagonal is 10 cm. long. or a right-angled triangle in which the lengths of the sides of the right angle are 8 cm. and 15 cm.

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Final Examinations

4 **[a]** Graph the figure ABCD where A (2 , 7) , B (3 , 4) , C (8 , 4) , D (7 , 7)
What is the name of the figure ABCD ?

[b] Solve the equation : $5x + 3 = 13$ where $x \in \mathbb{N}$

5 ***The following table shows the recorded temperatures in 40 cities on a day :***

Temperatures	20 –	22 –	24 –	26 –	28 –	Total
Number of cities	7	9	11	8	5	40

Represent these data by frequency polygon.

Additional question

Complete :

[a] The multiplicative identity element in $\mathbb{N}$ is

[b] $(9 \times 4) \times 3 =$ $\times (3 \times 4)$

[c] The set of natural numbers less than 5 is

[d] 1 , 3 , 9 , 27 , ... , ... (in the same pattern)

8 Giza Governorate

Maths inspection

Answer the following questions :

1 ***Choose the correct answer :***

[a] If we multiply the number x by 7 , then we subtract 3 from the result we get
($7x + 3$ **or** $3x + 7$ **or** $7x - 3$ **or** $x - 21$)

[b] If the side length of a rhombus is x and its perimeter is P , then the mathematical relation between x and P is P = ...
($x + 4$ **or** $4x$ **or** $4 - x$ **or** $x - 4$)

[c] The area of the rhombus whose diagonals are of length 12 cm. and 16 cm. = ... cm^2
(56 **or** 25 **or** 96 **or** 192)

[d] The geometric transformation  is
(translation **or** rotation **or** reflection)

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

2 ***Complete the following :***

[a] The shaded triangle is an image of the other triangle by 

[b] If the perimeter of a square = 32 cm., then its area = ... cm^2

[c] If $x - 3 = 5$, $x \in \mathbb{N}$, then x = ...

[d] The area of square whose diagonal length is 12 cm. is cm^2

3 **[a]** Solve the following equation : $5x - 7 = 33$, $x \in \mathbb{N}$

[b] In the Cartesian coordinates determine the points A (8 , 5) , B (8 , 2) , C (5 , 2) , D (5 , 7) , then draw the figure ABCD and draw its image by reflection in $\overleftrightarrow{CD}$

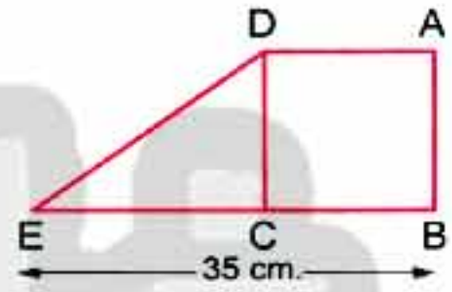
4 **[a]** Find the circumference of a circle whose diameter is 14 cm. , $\left(\pi = \frac{22}{7}\right)$

[b] ***In the opposite figure :***

ABCD is a square of side length 15 cm.

, E $\in$ BC , BE = 35 cm.

Find the area of the figure ABED



5 ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Sets	4 –	6 –	8 –	10 –	The Total
Frequency	12	8	16	14	50

Draw the frequency polygon to represent these data.

Additional question

Choose the correct answer :

[a] If O is the set of odd numbers , then O $\mathbb{N}$

($\in$ or $\notin$ or $\subset$ or $\not\subset$)

[b] $\{2 , 3\}$ $\mathbb{N}$ ($\in$ or $\notin$ or $\subset$ or $\not\subset$)

[c] If X = $\{x : x \in \mathbb{N} , 2 \leq x \leq 3\}$, then X = ...

($\{2 , 3\}$ or $\{3\}$ or $\{2\}$ or $\varnothing$)

[d] The least prime number × any prime number = ... number.

(odd or even or prime or other wise)

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الصف الخامس الابتدائى موقع ذاكرولى التعليمى كتاب المعاصر

Final Examinations

9 Alexandria Governorate

Middle Educational Zone
Maths inspection

Answer the following questions :

1 ***Complete :***

[a] The area of a square of diagonal length 8 cm. = ... cm^2

[b] If $35 + x = 18 + 35$, then x = ...

[c] The triangle whose base length is 5 cm. and its corresponding height is 6 cm. then its area = ... cm^2

[d] The rhombus whose area is 36 cm^2 and the length of one of its diagonals is 8 cm. , then the length of the other diagonal = ... cm.

2 ***Choose the correct answer :***

[a] If we multiply the number x by 7 , then we subtract from the result 3 , we shall get

($7x + 3$ **or** $3x + 7$ **or** $7x - 3$ **or** $3 - 7x$)

[b] The area of rhombus whose diagonals 10 cm. and 20 cm. is cm^2

(200 **or** 30 **or** 100 **or** 400)

[c] The sum of two numbers a and b is 10, then b = ...

($10 - a$ **or** $a - 10$ **or** $a + 10$ **or** $10 - b$)

[d] The diameter length of a circle whose circumference is 44 cm. = ... cm. $\left(\pi = \frac{22}{7}\right)$

(28 **or** 21 **or** 14 **or** 7)

3 **[a]** On the coordinate plane, draw Δ ABC where A (3 , 5) , B (6 , 5) , C (3 , 2) , then draw the image of Δ ABC by reflection across $\overleftrightarrow{AC}$

[b] ***Complete :***

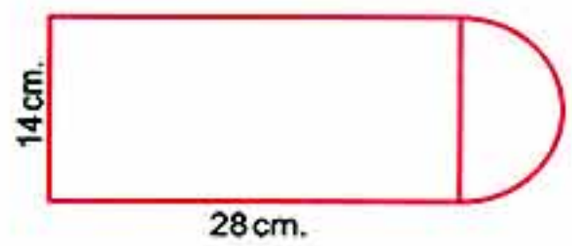
(1) The perimeter of an equilateral triangle whose side length is L cm. = ... cm.

(2) The area of a rectangle whose length is x cm. and width is 5 cm. = ... cm^2

4 **[a]** ***Solve each of the following equations :***

(1) $3x + 7 = 19$ **(2)** $2x - 15 = 7$

[b] Calculate the perimeter of the following figure , where $\left(\pi = \frac{22}{7}\right)$

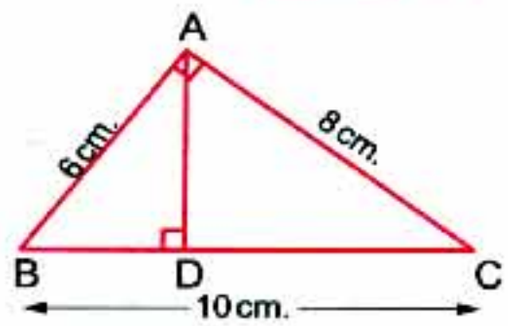


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كتاب المعاصر
موقع ذاكرولى التعليمى
الصف الخامس الابتدائى

5 **[a]** ***In the opposite figure :***

ABC is a right-angled triangle at A, $\overline{AD} \perp \overline{BC}$

Find the area of Δ ABC and the length of $\overline{AD}$



[b] ***The following table represents the marks of 50 students in the math exam in a month.***

Sets	10 –	20 –	30–	40–	Total
Frequency	10	12	18	10	**50**

Draw the frequency polygon which represents the given data.

Additional question

[a] Using the properties of addition find the value : 32 + 47 + 68 + 3

[b] ***Use the distribution property in $\mathbb{N}$ to find :***

(1) 112 × 99 **(2)** 215 × 101

10 Alexandria Governorate

East Educational Zone
Supervision of Maths

Answer the following questions :

1 ***Choose the correct answer :***

[a] Subtracting 3 from double of the number x = ...

($x-3$ **or** $2x-3$ **or** $3x+2$ **or** $5x$)

[b] A square whose diagonal length is 8 cm. , its area = ... cm^2

(8 **or** 16 **or** 32 **or** 64)

[c] There are axes of symmetry of an equilateral triangle.

(0 **or** 1 **or** 2 **or** 3)

[d] A year and 3 months = ... months.

(13 **or** 33 **or** 15 **or** 27)

2 ***Complete :***

[a] $4\frac{2}{5}$ = ... (as a decimal)

[b] If $x + 8 = 15$, $x \in \mathbb{N}$, then x = ...

[c] The number of axes of symmetry of the rhombus = ...

[d] A parallelogram whose area is 36 cm^2 and the length of a side of it = 9 cm. , then the corresponding height to this side = ... cm.

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
كتاب المعاصر
موقع ذاكرولى التعليمى
الصف الخامس الابتدائى

Final Examinations

3 **[a]** ***Solve the equations :***

(1) $x - 5 = 19$, $x \in \mathbb{N}$ **(2)** $2x + 9 = 21$, $x \in \mathbb{N}$

[b] A rhombus of diagonal lengths are 12 cm. and 16 cm., calculate its area.

4 **[a]** Δ ABC is a right-angled triangle at B , where AB = 6 cm., BC = 8 cm. and AC = 10 cm. Find the area of this triangle.

[b] In a 2-dimensional co-ordinate plane , plot the points A (8 , 5) , B (8 , 2) , C (5 , 2) and D (5 , 7). If $\overleftrightarrow{CD}$ is the axis of reflection of the figure ABCD , then determine the image of ABCD.

5 **[a]** Calculate the circumference of a circle , if the longest chord in this circle is 7 cm. where $\left(\pi = \frac{22}{7}\right)$

[b] ***Represent the following data by frequency polygon :***

Sets	20 –	30 –	40 –	50 –	Total
Frequency	8	10	16	4	50

Additional question

Complete :

[a] 99 added to the neutral element of multiplication = ...

[b] 21 + (36 + ...) = (21 + ...) + 84

[c] The set of natural numbers less than 7 and greater than 2 is

[d] 1, 4 , 9 , 16, ... , ... (in the same pattern)

11 El-Kalyoubia Governorate Directorate of Education

Answer the following questions :

1 ***Complete each of the following :***

[a] The square whose diagonal length = 10 cm. , its area = ... cm^2

[b] If $x + 2 = 7$, $x \in \mathbb{N}$, then $x - 2$ = ...

[c] The area of the triangle whose base length is 6 cm. and height 8 cm. = ... cm^2

[d] $\frac{\text{circumference of the circle}}{\text{diameter length}}$ = ...

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

كتاب المعاصر موقع ذاكرولى التعليمى الصف الخامس الابتدائى

2 ***Choose the correct answer :***

[a] Number of lines of symmetry of the square = ...

(1 **or** 2 **or** 3 **or** 4)

[b] Subtracting 9 from twice of the number x = ...

($2x-9$ **or** $9-2x$ **or** $2x+9$ **or** $9x$)

[c] If X = $\{x : x \in \mathbb{N} , 5 \leq x < 7\}$, then X = ...

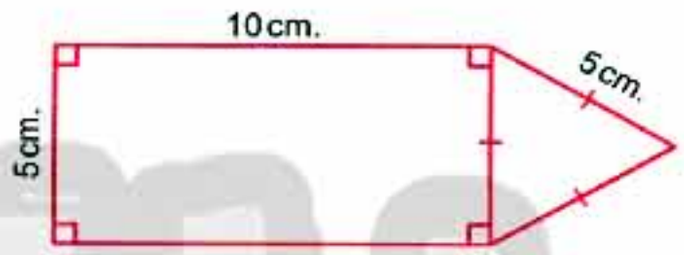
($\{5\}$ **or** $\{6\}$ **or** $\{5 , 6\}$ **or** $\{5 , 6 , 7\}$)

[d] If the sum of the two numbers x and y is 20 , then y = ...

($20 + x$ **or** $20 - x$ **or** $x - 20$ **or** $\frac{x}{20}$)

3 **[a]** Find the radius length of the circle whose circumference = 132 cm. (Where $\pi = \frac{22}{7}$)

[b] Find the perimeter of the opposite figure :



4 **[a]** Solve the equation : $2x - 5 = 3$, where $x \in \mathbb{N}$

[b] In the Cartesian coordinates plane, locate the points A (2 , 2) , B (5 , 2) , C (5 , 6) :

(1) Find the length of each of $\overline{AB}$ and $\overline{BC}$

(2) Draw the image of figure ABC by reflection in $\overleftrightarrow{BC}$

5 ***The following table shows the marks of 40 pupils in maths exam :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	6	K	14	12	40

(1) Find the value of K

(2) Represent these data by the frequency polygon.

12 El-Sharkia Governorate

Directorate of Education
Dep. of Governmental L. Schools

Answer the following questions :

1 ***Choose the correct answer :***

[a] The area of square whose diagonal length is 8 cm. is cm^2

(64 **or** 32 **or** 16 **or** 10)

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Final Examinations

[b] If $x + 3 = 8$, $x \in \mathbb{N}$, then $x =$ (11 **or** 24 **or** 13 **or** 5)

[c] If the sum of two numbers x and y is 20 , then y = ...

($x - 20$ **or** $20 - x$ **or** $x + 20$ **or** $\frac{x}{20}$)

[d] The square has symmetric axes. (1 **or** 2 **or** 3 **or** 4)

2 ***Complete the following :***

[a] Area of parallelogram = ... ×

[b] The radius length of circle with circumference 44 cm.

and $\pi = \frac{22}{7}$ is cm.

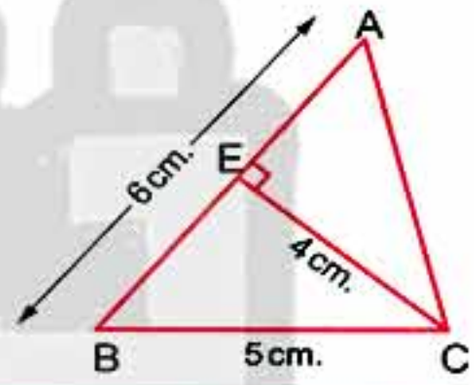
[c] If $2x = 10$ and $x \in \mathbb{N}$, then $x =$

[d] The length of the base of a triangle whose area = 80 cm^2.
and its height = 10 cm. is cm.

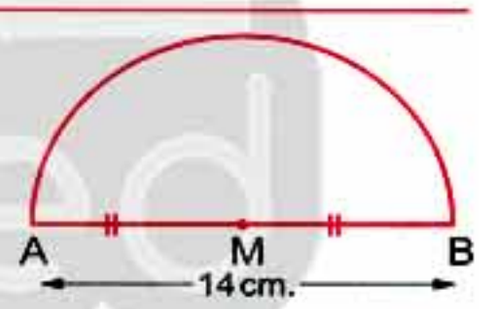
3 [a] Solve the equation in $\mathbb{N}$: $\frac{1}{2} x - 5 = 3$

[b] ***In the opposite figure :***

ABC is a triangle , $\overline{CE} \perp \overline{AB}$,
if AB = 6 cm. , BC = 5 cm.
and CE = 4 cm. Find area of Δ ABC



4 [a] Calculate the perimeter of the opposite figure
where AB = 14 cm. $\left(\pi = \frac{22}{7}\right)$



[b] ***Which is greater in area ?***
a parallelogram of base 10 cm. and corresponding height 6 cm.
or a rhombus of diagonals lengths 12 cm. and 16 cm.

5 [a] In 2-dimensional coordinate plane locate the points A (3 , 1) , B (5 , 1) , C (5 , 3) , D (3 , 3)
Name the figure ABCD , then find its area.

[b] ***The following table shows the recorded temperatures in 40 cities on day :***

Temperatures	20 –	22 –	24 –	26 –	28 –	Total
Number of cities	7	10	12	6	5	40

Draw each of histogram and the frequency polygon.

هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

Additional question

Choose the correct answer :

[a] 49 ÷ 8 $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

[b] If X = $\{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then X = ...
({4} **or** {3} **or** {3 , 4} **or** {4 , 5})

[c] If E is the set of even numbers, then E $\mathbb{N}$
($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

[d] (8 × 3) × 5 = ... × (3 × 5) (3 **or** 5 **or** 8 **or** 15)

13 El-Monofia Governorate

El-Bagour Educational Zone
Maths Inspection

Answer the following questions :

1 ***Complete :***

[a] The perimeter of a square whose side length is x cm. = ... cm.

[b] The sum of two numbers is 21 one of them is x , then the other = ...

[c] The area of a rectangle whose length is x cm. and width is 5 cm. = ... cm^2

[d] The number of axes of symmetry of the rhombus = ...

2 ***Choose the correct answer :***

[a] Twice the number x subtracted 3 from it = ...
($x-3$ **or** $2x+3$ **or** $2x-3$ **or** $3-2x$)

[b] If $x + 3 = 5$, $x \in \mathbb{N}$, then : x = ... (1 **or** 2 **or** 3 **or** 4)

[c] The square whose diagonal length is 8 cm. its area = ... cm^2
(64 **or** 32 **or** 16 **or** 8)

[d] The length of the base of the triangle is 8 cm. and its height is 5 cm. , then its area = ... cm^2 (9 **or** 40 **or** 8 **or** 20)

3 **[a]** Find the circumference of circle with diameter length 14 cm. $\left(\pi = \frac{22}{7}\right)$

[b] Solve the following equation : $x - 5 = 8$, $x \in \mathbb{N}$

4 In the Cartesian co-ordinates plane determine the points A (2 , 2) , B (5 , 2) , C (5 , 8) , D (2 , 8), if $\overleftrightarrow{BC}$ is the axis of reflection of the figure ABCD , then determine the image of the figure ABCD

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Final Examinations

5 ***Draw the frequency polygon for the following frequency distribution :***

Sets	10 –	12 –	14 –	16 –	18 –	20 –	Total
Frequency	2	5	7	11	6	4	35

Additional question

[a] If $X = \{a : a \in \mathbb{N} , 1 \leq X < 5\}$, $Y = \{4 , 5 , 6\}$

Find : **(1)** $X \cap Y$ **(2)** $X \cup Y$ **(3)** $X - Y$

[b] Use the properties of addition in $\mathbb{N}$ to find result of :
49 + 257 + 51 (mention the used property)

14 El-Gharbia Governorate

General Mathematics Supervision

Answer the following questions :

1 ***Complete :***

[a] If $x + 8 = 18$, then $x =$

[b] The rhombus with diagonals lengths 6 cm., and 8 cm.
its area = ... cm^2

[c] If we add 3 to twice the number x , then we will get the number

[d] The number of axes of symmetry of the rectangle = ...

2 ***Choose the correct answer :***

[a] The square whose diagonal length = 8 cm. , its area = ... cm^2
(64 **or** 32 **or** 16 **or** 8)

[b] Subtracting 7 from the double of the number x = ...
($x - 7$ **or** $2x - 7$ **or** $7x + 2$ **or** $4x$)

[c] If $Y \div 10 = 10$, then Y = ... (100 **or** 10 **or** 1 **or** 0)

[d] The square has lines of symmetry. (0 **or** 1 **or** 3 **or** 4)

3 **[a]** Find the area of the triangle whose base length is 8 cm. and its corresponding height is 10 cm.

[b] Solve the equation : $2x - 7 = 5$ where $x \in \mathbb{N}$

4 **[a]** On the coordinate plane draw Δ ABC where : A (2 , 1) , B (5 , 1) , (5 , 5) , then draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$

[b] Find the circumference of the circle whose diameter is 7 cm. $\left(\pi = \frac{22}{7}\right)$

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5 **[a]** Solve the equation : $x + 3 = 12$ where $x \in \mathbb{N}$

[b] ***Represent the following date by a frequency polygon.***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	4	6	5	10	25

Additional question

Complete :

[a] The smallest natural number is

[b] $23 \times (98 + 2) = 23 \times$ = ...

[c] The set of prime numbers which are less then 15 is

[d] $(20 \times 50) \times 30 =$ $\times (50 \times 30)$

15 El-Dakahlia Governorate

Maths Supervision

Answer the following questions :

1 ***Complete :***

[a] Subtract 3 from the number y, the symbolic experssion is

[b] The perimeter of square whose side length is L = ...

[c] The area of the triangle = $\frac{1}{2} \times$ $\times$

[d] The area of a parallelogram = ...

2 ***Choose the correct answer :***

[a] If $x + 8 = 15$, $x \in \mathbb{N}$, then $x =$ (3 **or** 7 **or** 6 **or** 5)

[b] The square whose diagonal length is 8 cm., its area = ... cm^2

(64 **or** 32 **or** 16 **or** 8)

[c] The number of axes of symmetry of rhombus equals

(0 **or** 1 **or** 2 **or** 4)

[d] The area of the largest rectangle whose perimeter is 24 cm.
= cm^2 (15 **or** 36 **or** 72 **or** 144)

3 **[a]** ***Which is greater in area ?*** a rhombus in which the lengths of its diagonals are 8 cm. and 6 cm. or the parallelogram in which the length of its base is 10 cm. and the corresponding height is 5 cm. , then calculate the difference between them.

[b] ***Complete :*** The circumference of a circle = ...

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Final Examinations

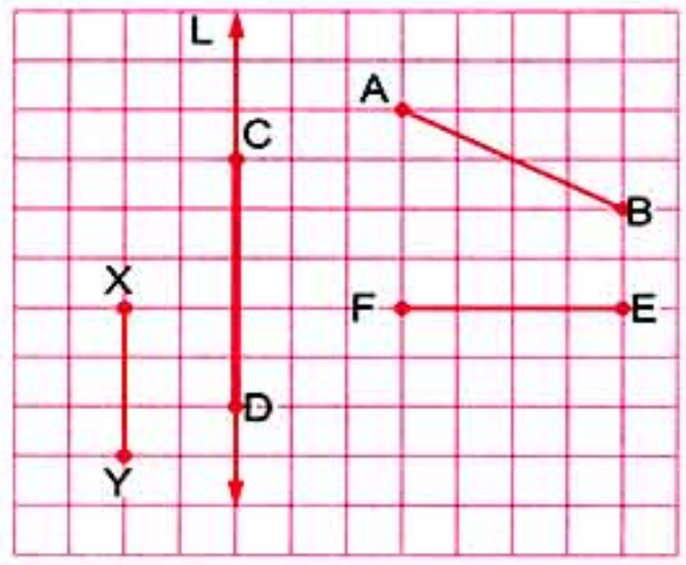
4 Find the image of the indicated line segments by reflection across L , then complete :

(1) The image of $\overline{AB}$ by reflection across L is

(2) The image of $\overline{EF}$ by reflection across L is

(3) The image of $\overline{XY}$ by reflection across L is

(4) The image of $\overline{CD}$ by reflection across L is



5 **[a]** An employee spends his monthly salary as follow 1000 pounds for food, 500 pounds for clothes 250 the rent of the flat 250 other spending represent there data on the shown circular sectors.



[b] ***Solve the equation :*** $3x + 3 = 12$, where $x \in \mathbb{N}$

Additional question

Choose the correct answer :

[a] $\frac{9-5}{3-3}$ = ... (zero **or** 3 **or** 4 **or** meaningless)

[b] The smallest counting number is (0 **or** 1 **or** 2 **or** 3)

[c] $\{5 , 7 , 8\}$ $\mathbb{N}$ ($\subset$ **or** $\not\subset$ **or** $\in$ **or** $\notin$)

[d] If $X = \{x : x \in \mathbb{N} , x \leq 2\}$, then X = ...

($\{0 , 1\}$ **or** $\{1\}$ **or** $\{0 , 1 , 2\}$ **or** $\varnothing$)

16 Ismailia Governorate

Directorate of Education
Directing Mathematics

Answer the following questions :

1 ***Complete :***

[a] If $3x = 21$, then x = ...

[b] If b = 3 , then 2 b – 5 = ...

[c] Adding 5 to three times a number y is

[d] A rhombus its area 50 cm^2 and the length of one of its diagonals 25 cm. , then the length of other diagonal = ... cm.

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2 ***Choose the correct answer :***

[a] The opposite transformation  is

(translation **or** rotation **or** reflection)

[b] If the side lengths of a triangle are equal in length then the triangle is triangle. (scalene **or** isosceles **or** equilateral)

[c] The angle whose measure 180 is called angle.

(right **or** obtuse **or** acute **or** straight)

[d] If $y = 3x + 5$, then the constant (y **or** x **or** 3 **or** 5)

3 **[a]** ***Which is greater in area ?*** a square its diagonal length 10 cm. or a parallelogram its base length 12 cm. and height 8 cm.

[b] A circle its diameter 21 cm. Find its circumference $\left(\pi = \frac{22}{7}\right)$

4 **[a]** In the coordinate plane draw the triangle ABC where A (1 , 1) , B (3 , 1) , C (3 , 5) , then draw its image by reflection on $\overleftrightarrow{BC}$

[b] ***Solve the equations :***

(1) $2x + 3 = 13$ **(2)** $\frac{1}{2}y = 6$

5 **[a]** A triangle its area 48 cm^2 and base length 8 cm. , find the length of its height.

[b] ***The following table shows the marks of 40 pupils in mathematics exam in one month where the full mark is 50 marks :***

Sets	10 –	20 –	30 –	40 –	**Total**
Frequency	10	12	8	10	**40**

Represent these data by frequency polygon.

Additional question

Calculate using commutative , associative and distributive properties :

(1) 642 + 171 + 358 + 29 **(2)** 25 × 304

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Final Examinations

17 Suez Governorate

Directorate of Educational
Maths Inspectorate

Answer the following questions :

1 ***Choose the correct answer :***

[a] If $x + 3 = 5$, $x \in \mathbb{N}$, then $x =$ (1 **or** 2 **or** 3 **or** 4)

[b] The area of square of diagonal length 6 cm. is cm^2

(18 **or** 36 **or** 24 **or** 6)

[c] The sum of the two numbers a and b is 10 , then b = ...

(a – 10 **or** a **or** 10 – a **or** 10)

[d] The number of axes of symmetry of the rhombus = ...

(1 **or** 0 **or** 3 **or** 2)

[e] If $X = \{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then $x \in$

({4} **or** {3 , 4} **or** {3} **or** {4 , 5})

2 ***Complete :***

[a] Add 5 to twice the number x = ...

[b] The triangle of base length 5 cm. and the corresponding height is 6 cm. , its area = ... cm^2

[c] The number of axes of symmetry of an equilateral triangle is

[d] The circumference of a circle with diameter 20 cm. is π cm.

[e] If $945 = (x \times 100) + 45$, then x = ...

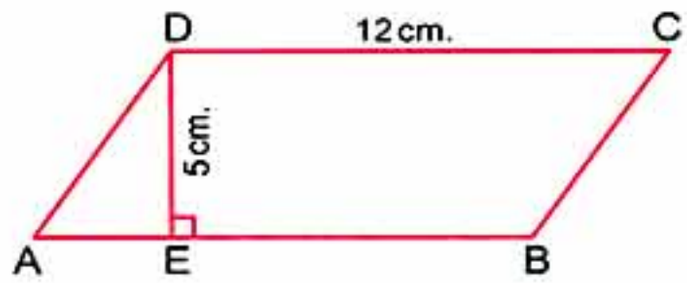
3 **[a]** Solve the equation : $3x + 7 = 19$, $x \in \mathbb{N}$

[b] Find the area of rhombus whose diagonals lengths 20 cm. and 10 cm.

4 **[a]** Find the circumference of the circle of radius 21 cm. $\left(\pi = \frac{22}{7}\right)$

[b] In 2-dimensional coordinate plane locate the points A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of Δ ABC by reflecting across $\overleftrightarrow{BC}$

5 **[a]** Find the area of parallelogram ABCD



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[b] ***The following table shows the marks of 35 students in math exam :***

Sets	5 –	10 –	15 –	20 –	25 –	Total
Frequency	5	9	11	6	4	35

Represent these data by frequency polygon.

18 Port Said Governorate — Maths Inspection

Answer the following questions :

1 ***Choose the correct answer :***

[a] If $x + 7 = 9$, $x \in \mathbb{N}$, then $x =$ (16 *or* 2 *or* 11 *or* 13)

[b] The area of a triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2

(15 *or* 3 *or* 11 *or* 60)

[c] Subtract 4 form the number y the symbolic expression is

($2y - 4$ *or* $y + 4$ *or* $y - 4$ *or* $2y + 4$)

[d] The number of axes of symmetry of the square

(1 *or* 2 *or* 3 *or* 4)

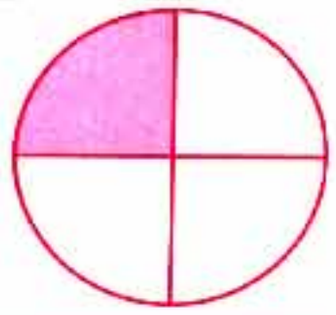
2 ***Complete the following :***

[a] Shorouk saved x pounds , her father gave her 10 pounds , then she has pounds.

[b] The area of a rhombus whose diagonals are 6 cm. and 8 cm. is cm^2

[c] ***In the opposite figure :***

The shaded sector represents of the circle.



[d] The area of square = $\frac{1}{2}$ × diagonal length ×

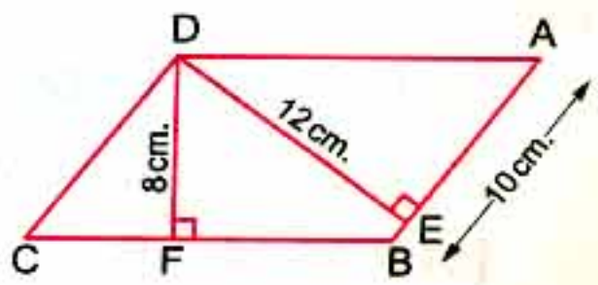
3 **[a]** Solve the following equation : $2x + 9 = 21$, $x \in \mathbb{N}$

[b] ***In the opposite figure :***

ABCD is a parallelogram in which AB = 10 cm. , DE= 12 cm. , DF = 8 cm. ***Find :***

(1) The area of the parallelogram ABCD.

(2) The length of $\overline{BC}$



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Final Examinations

4 **[a]** Find the circumference of a circle with diameter 10 cm. ($\pi = 3.14$)

[b] In the Cartesian coordinates plane , determine the points A (2 , 5) , B (5 , 2) and C (5 , 8) , then draw the image of Δ ABC by reflection in $\overleftrightarrow{BC}$

5 ***From the following table draw the histogram and the frequency polygon :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

Additional question

Complete :

(1) The multiplicative neutral element in $\mathbb{N}$ is

(2) If X = $\{x : x \in \mathbb{N} , 3 \leq x < 4\}$, then $x \in$

(3) The set of natural numbers less than 7 is

(4) 32 + (59 + ...) = (32 + 68) + ...

19 Damietta Governorate

Damietta Inspection of Mathematic
Official Language Schools

Answer the following questions :

1 ***Choose the correct answer :***

[a] If the ordered pair (2 , 5) = (2 , y) , then y = ...

(2 **or** 3 **or** 4 **or** 5)

[b] If the sum of two numbers x and y is 20 , then y = ...

($20 + x$ **or** $20 - x$ **or** $x - 20$ **or** $\frac{x}{20}$)

[c] Circumference of the circle = ...

(π r **or** 2π r **or** π **or** π + r)

[d] The number of axes of symmetry of the rhombus is

(0 **or** 1 **or** 2 **or** 4)

2 ***Complete :***

[a] A square whose diagonal is 8 cm. , then its area = ... cm^2

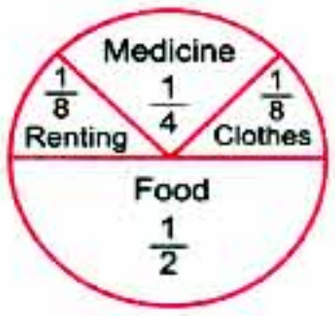
[b] If the number x is 9 more , then the double of y , then x = ...

[c] If $x - 4 = 6$, $x \in \mathbb{N}$, then x = ...

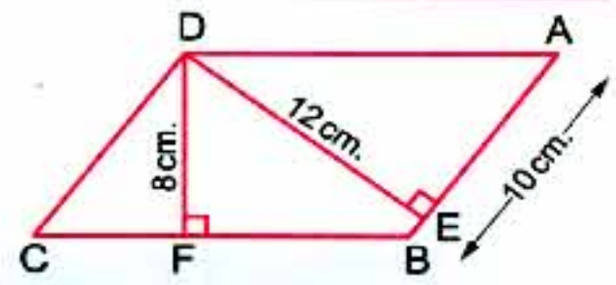
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[d] An employee spends his salary as follows $\frac{1}{8}$ of it to clothes , $\frac{1}{2}$ of it to food , $\frac{1}{4}$ of it to medicine and $\frac{1}{8}$ of it to renting. If his salary was L.E. 1 600 , then the spends of food = L.E.

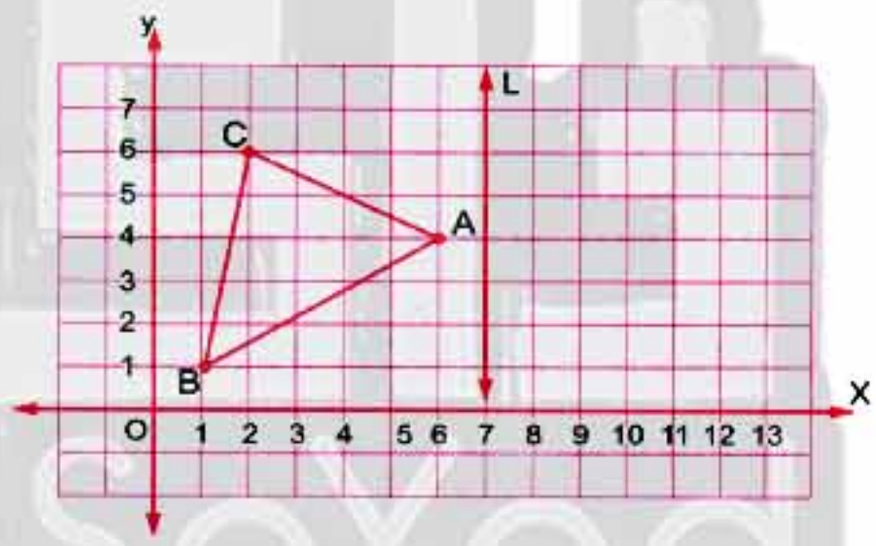


3 **[a]** ***In the opposite figure :***
ABCD is a parallelogram in which
AB = 10 cm. , DE = 12 cm. , DF = 8 cm.
Find : **(1)** The area of the parallelogram ABCD
(2) The length of $\overline{BC}$



[b] Calculate the circumference of the circle whose diameter is 14 cm. $\left(\pi = \frac{22}{7}\right)$

4 **[a]** In the cartesian coordinates plane , from the opposite figure :
(1) **Complete :** A (..... , ...) , B (..... , ...) and C (..... , ...)
(2) If L is the axis of reflection of the Δ ABC , draw $\Delta \grave{A}\grave{B}\grave{C}$ the image of Δ ABC by reflection in the straight line L



[b] Solve the following equation :
$2x + 9 = 21$, $x \in \mathbb{N}$

5 **[a]** A triangle whose area is 120 cm^2 and its height is 5 cm.
Find the length of its base.

[b] ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Set	10 –	20 –	30 –	40 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represent these data

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Additional question

Choose the correct answer :

(1) (5 – 9) ℕ (∈ **or** ⊂ **or** ∉ **or** ⊄)

(2) The next number in the pattern 1 , 3 , 9 , 27 is
(30 **or** 33 **or** 81 **or** 36)

(3) (4 ×) × 78 = 7800 (5 **or** 25 **or** 50 **or** 125)

(4) (7 × 2) × 5 = ... × (2 × 5) (2 **or** 5 **or** 7 **or** 14)

20 Kafr El-Sheikh Governorate

El-Borg Educational Directorate
Directory of Maths

Answer the following questions :

1 ***Complete :***

[a] The circumference of the circle = π ×

[b] If $x + 2 = 5$, then x = ...

[c] If $y = x + 5$, then the constant is

[d] Adding 5 to twice the number x is

2 ***Choose the correct answer :***

[a] If $3x = 15$, $x \in \mathbb{N}$, then x = ... (12 **or** 5 **or** $\frac{1}{5}$ **or** $\frac{1}{3}$)

[b] If A (2 , 3) , B (2 , 7) , then the midpoint of $\overline{AB}$ is
((10 , 4) **or** (2 , 5) **or** (2 , 10) **or** (0 , 9))

[c] The area of a rhombus of diagonals 10 cm. and 20 cm. = ... cm^2
(200 **or** 30 **or** 100 **or** 400)

[d] The sum of the two numbers x and y is 10 , then x = ...
(10 **or** 10 + x **or** 10 – x **or** 10 – y)

3 **[a]** If the number x exceeds twice the number y by 9 write the mathematical relation between x and y

[b] Solve the equation : $2x - 1 = 3$ in ℕ

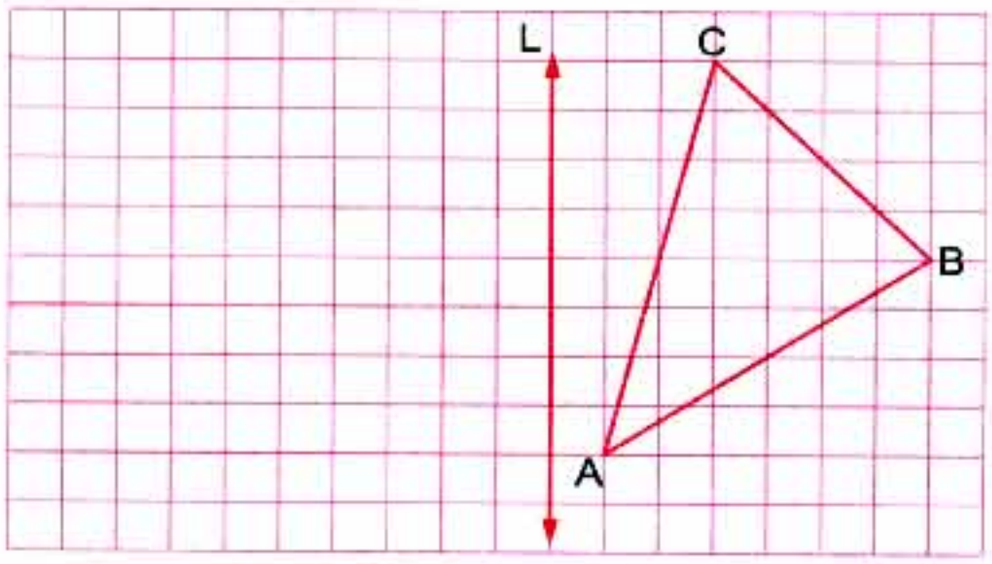
4 **[a]** Find the area of a triangle whose base length is 12 cm. and height is 5 cm.

[b] Find the circumference of a circle if its diameter is 14 cm. $\left(\pi = \frac{22}{7}\right)$

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5 **[a]** Draw the image of the Δ ABC by reflection in the straight line L



[b] ***The following table shows the marks of 50 pupils in math test in one month :***

Sets	10 –	20 –	30 –	40 –	**Sum**
Frequency	10	12	18	10	**50**

Represent these data by frequency polygon.

Additional question

[a] ***List , then represent the following set on the number line :***

$X = \{x : x \in \mathbb{N} , 2 \leq x < 6\}$

[b] ***Use the distributive property to get the product of :*** 18×99

21 El-Beheira Governorate

Rashid Educational Zone
Maths supervision

Answer the following questions :

1 ***Complete the following :***

[a] Twice a number x is

[b] The area of the rhombus = $\frac{1}{2}$ × the product of

[c] If the area of square is 8 cm^2 , then its diagonal length = ... cm.

[d] The perimeter of equilateral triangle whose side is x = ...

2 ***Choose the correct answer :***

[a] If $x + 5 = 11$, then x = ... (5 *or* 6 *or* 7 *or* 8)

[b] A circumference of a circle is 22 cm. , then its diameter length = ... cm. where $\pi = \frac{22}{7}$ (3.5 *or* 7 *or* 8 *or* 11)

[c] The square has axes of symmetry. (0 *or* 2 *or* 3 *or* 4)

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[d] A triangle whose area = 120 cm^2 , and its height = 10 cm. , then its base length = ... cm. (12 *or* 18 *or* 24 *or* 10)

3 [a] ***Solve the equations in*** $\mathbb{N}$ ***:***

(1) $x - 3 = 21$ (2) $3y = 27$

[b] ***Which is larger in area ?*** a triangle with base 8 cm. and height 7 cm. or a parallelogram with base length 6 cm. and height 5 cm.

4 [a] If the diameter length of a bicycle's wheel is 66 cm. what is the covered distance if the wheel turns 1000 rounds ? where ($\pi = 3.14$)

[b] In the coordinate plane , draw the triangle ABC where A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the triangle ABC by reflection in $\overleftrightarrow{BC}$

5 [a] The lengths of the diagonals of a rhombus are 30 cm. and 20 cm. Calculate its area.

[b] ***Represent the following data by a frequency polygon.***

Sets	3 –	6 –	9 –	12 –	15 –	Total
Frequency	4	7	10	6	3	30

Additional question

Complete :

[a] The additive neutral element in $\mathbb{N}$ is

[b] $47 \times (36 + 64) = 47 \times$ = ...

[c] The set of even numbers – the set of odd numbers = ...

[d] If $5 + 0 = 0 + 5 = 5$, then it is called property.

22 El-Fayoum Governorate

Directorate of Education
Supervisors of Mathematics

Answer the following questions :

1 ***Choose the correct answer :***

[a] If we subtract 5 from x , we get

($5x$ *or* $5 - x$ *or* $x - 5$ *or* $x + 5$)

[b] The area of the triangle in which the length of its base 10 cm. and its height 6 cm. is cm^2 (30 *or* 60 *or* 16 *or* 15)

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[c] 34000 = ... thousands. (34000 *or* 3400 *or* 340 *or* 34)

[d] The shown transformation is called **b | d**

(reflection *or* rotation *or* translation)

2 ***Complete each of the following :***

[a] $5x = 35$, $x \in \mathbb{N}$, then x = ...

[b] The number of axes of symmetry of a square = ...

[c] The smallest odd prime number is

[d] If the perimeter of a square is 32 cm. , then its side = ... cm.

3 [a] ***Solve the following equations such that $x \in \mathbb{N}$:***

(1) $x - 4 = 1$ (2) $3x + 8 = 29$

[b] A parallelogram of area 36 cm^2 , and the length of its base is 4 cm. , find the corresponding height of its base.

4 [a] ***Which is smaller in area ?***

A rhombus whose diagonals lengths is 8 cm. and 5 cm. or a rectangle whose width is 5 cm. and length is 6 cm.

[b] A circle of radius 14 cm. , find its circumference. $\left(\pi = \frac{22}{7}\right)$

5 [a] On a coordinate plane , draw the figure ABCD where A (1 , 1) , B (4 , 1) , C (4 , 3) , D (1 , 3) then complete :

(1) The length of AB = ... unit.

(2) The name of the figure ABCD is

[b] ***Draw the frequency polygon which represent the following table of data :***

Sets	10 –	20 –	30 –	40 –	50 –	**Total**
Frequency	3	4	6	4	3	**20**

Additional question

Complete using ($\in$, $\notin$, $\subset$ or $\not\subset$) :

[a] $\frac{0}{3}$ $\mathbb{N}$ [b] $\{\frac{1}{3}, 1, 2\}$ $\mathbb{N}$

[c] The set of even numbers The set natural numbers.

[d] $\{2, 3, 0, 4\}$ $\mathbb{N}$

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Final Examinations

23 Beni Suef Governorate

Directorate of Education
Directorate of Official Lang Schools

Answer the following questions :

1 ***Choose the correct answer :***

[a] $x + 5 = 20$, $x \in \mathbb{N}$, then $x =$ (4 **or** 6 **or** 15 **or** 25)

[b] The number of altitudes of the triangle is

(0 **or** 1 **or** 2 **or** 3)

[c] The number of axes of symmetry of the rhombus = ...

(1 **or** 2 **or** 3 **or** 4)

[d] If the sum of two numbers x and y is 20 , then y = ...

($20 + x$ **or** $20 - x$ **or** $x - 20$ **or** $y + 20$)

2 ***Complete the following :***

[a] Area of rectangle = ... ×

[b] The length of diagonal of square is 12 cm. , then its area = ... cm^2

[c] Area of parallelogram = ... ×

[d] The opposite transformation is

3 [a] ***Solve the equations , where $x \in \mathbb{N}$:***

(1) $2x + 7 = 19$ (2) $x - 8 = 18$

[b] Find the circumference of a circle with a radius 14 cm. $\left(\pi = \frac{22}{7}\right)$

4 In a coordinate plane determine the points A (2 , 2) , B (4 , 2) , C (4 , 8) and D (2 , 8) , then :

[a] Draw ABCD

[b] Draw the image ABCD by reflection on $\overleftrightarrow{BC}$

5 [a] ***Which is greater in area ?*** a rhombus whose diagonals are 6 cm. and 8 cm. or a square whose diagonal is 8 cm.

[b] ***The following data represents the marks in Arabic test for students in one classroom :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	8	12	16	14	50

Draw the histogram for this distribution.

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Additional question

Using the properties of addition and multiplication in $\mathbb{N}$, find :

[a] 48 + 37 + 52 + 63 **[b]** 125 × 17 × 8

24 El-Menia Governorate

Governmental Language Schools
General Supervisor of mathematics

Answer the following questions :

1 ***Complete :***

[a] 3 x = 15 , then x = ...

[b] The square whose diagonal 8 cm. , its area cm^2

[c] The number of axes of symmetry of the rhombus = ...

[d] The perimeter of a rectangle is 20 cm. if its length is x , then its width is

2 ***Choose the correct answer :***

[a] The diameter length of a circle is 14 cm. , then its radius = ... cm.
(14 **or** 7 **or** 28 **or** 3.5)

[b] The length of the base of the traingle is 8 cm. and its height is 5 cm. , then the area = ... cm^2 (8 **or** 9 **or** 20 **or** 40)

[c] The perimeter of the equilateral traingle whose side length L cm. is cm. (L + 3 **or** $\frac{1}{3}$ L **or** L – 3 **or** 3 L)

[d] $x + 8 = 15$, $x \in \mathbb{N}$, then x = ... (3 **or** 7 **or** 6 **or** 5)

3 **[a]** ***Solve :***

(1) y – 3 = 9 where y $\in \mathbb{N}$ **(2)** 2 x + 9 = 21 where $x \in \mathbb{N}$

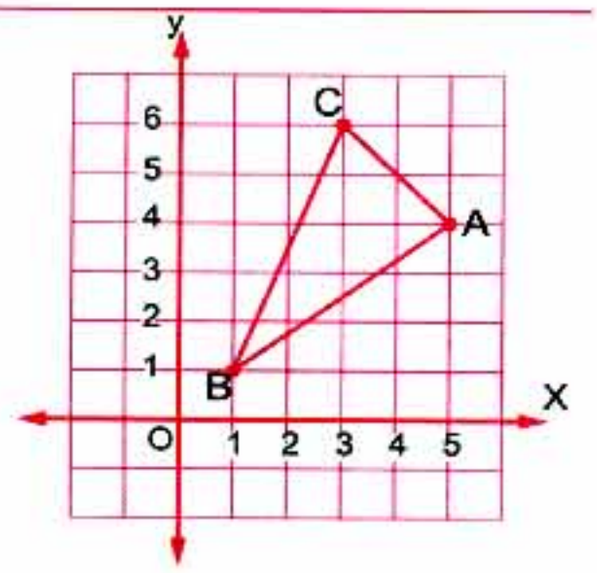
[b] Find the circumference of a circle with diameter length 14 cm. $\left(\pi = \frac{22}{7}\right)$

4 **[a]** From the opposite graph , complete :

A (..... , ...)

B (..... , ...)

C (..... , ...)



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[b] Find the area of rhombus whose side length 12 cm. and its height 10 cm.

5 [a] Translate the statement into an equation :

If 9 is subtracted from a number , then the result is 23

[b] ***Represent the following data by histogram :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	3	7	5	6	21

Additional question

Complete :

[a] If A , B , C are natural numbers , then $(A \times B) \times C = A \times (B \times C)$ called property.

[b] $91 \times (73 + 27) = 91 \times$ = ...

[c] The smallest natural number is

[d] The additive neutral element in $\mathbb{N}$ is

25 Assiut Governorate

Assiut Educational Zone
Al-Tahreer Language School

Answer the following questions :

1 ***Choose the correct answer :***

[a] If $x + 3 = 5$, $x \in \mathbb{N}$, then $x =$ (1 **or** 2 **or** 3 **or** 4)

[b] The area of rhombus whose diagonals length are 6 cm. and 8 cm. is cm^2 (48 **or** 12 **or** 24 **or** 40)

[c] If the longest chord in a circle is 7 cm. then the circumference of the circle is cm. where $\pi = \frac{22}{7}$ (3.7 **or** 7 **or** 22 **or** 44)

[d] The difference between two numbers is 5 , the smaller one is y the then greater number is (5 y **or** 5 – y **or** y – 5 **or** y + 5)

2 ***Complete :***

[a] Area of parallelogram = ... ×

[b] The number of axes of symmetry of the rectangle = ...

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[c] The rhombus whose area is 36 cm^2 and the length of one of its diagonals is 8 cm. then the length of the other diagonal = ... cm.

[d] Shorouk saved x pounds , her father gave her 10 pounds then she has

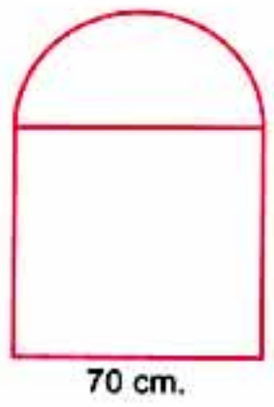
3 [a] Solve the equation : $2x + 9 = 21$, $x \in \mathbb{N}$

[b] ***In the opposite figure :***

There is a window which has the form of a square , whose side length is 70 cm. , and above it , there is a semicircle.

(1) Calculate the perimeter of the window.

(2) If the area of the semicircle is 3850 cm^2 , find the area of the window.



4 [a] ***Which is greater in area ?*** a square whose diagonal length is 10 cm. or a right angled triangle whose legs are 8 cm. and 6 cm.

[b] Find the number which if added to 3 , the sum will be 9

5 [a] In the cartesian co-ordinates plane , determine the points A (2 , 2) , B (4 , 2) , C (4 , 8) and D (2 , 8) If $\overleftrightarrow{BC}$ is the axis of reflection of the figure ABCD , determine the image of the figure ABCD

[b] ***The following table shows the frequency distribution of the number of work hours of 50 workers. Graph these data using the frequency polygon :***

Sets	2 –	4 –	6 –	8 –	10 –	Total
Frequency	8	9	15	16	2	**50**

Additional question

Choose the correct answer :

[a] $\frac{5}{7}$ $\mathbb{N}$ ($\in$ or $\notin$ or $\subset$ or $\not\subset$)

[b] If $X = \{a : a \in \mathbb{N} , 4 < a < 5\}$, then X = ...

({4} or {5} or {4 , 5} or $\varnothing$)

[c] The set of even numbers (E) $\cap$ the set of prime numbers (P) = ...

(P or {0} or $\mathbb{N}$ or {2})

[d] The sum of two natural numbers $\mathbb{N}$ ($\in$ or $\notin$ or $\subset$ or $\not\subset$)

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26 Souhag Governorate

Directorate of Education
Directorate of Official Language Schools

Answer the following questions :

1 ***Choose the correct answer :***

[a] The area of rhombus whose diagonals lengths are 6 cm. and 8 cm. is cm^2
(48 **or** 12 **or** 24 **or** 40)

[b] If the longest chord in a circle is 7 cm. , then the circumference of the circle is cm. where $\left(\pi = \frac{22}{7}\right)$ (3.5 **or** 7 **or** 22 **or** 44)

[c] The number of axes of symmetry of rhombus equals
(zero **or** 1 **or** 2 **or** 4)

[d] Twice the number x subtracted 7 from it = ...
($7 - x$ **or** $2x - 7$ **or** $7x + 2$ **or** $14x$)

2 ***Complete the following :***

[a] The perimeter of square whose side length is 10 = ... cm.

[b] Area of the triangle = $\frac{1}{2}$ the length of its base ×

[c] The side length of a square is 5 cm. , then its area = ... cm^2

[d] The number of symmetry axes of an equilateral triangle = ...

3 **[a]** ***Solve each of the following equation :***

(1) $2x + 8 = 14$ **(2)** $x - 7 = 25$

[b] Find the area of a triangle whose base length is 5 cm. and the corresponding height is 6 cm.

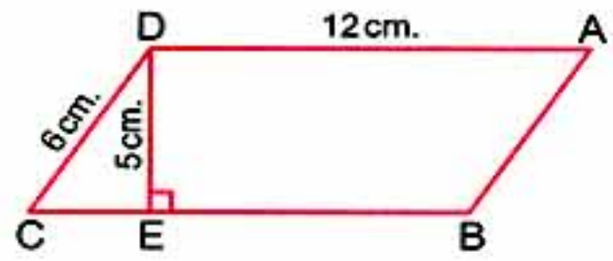
4 **[a]** ***In the opposite figure :***

ABCD is a parallelogram

where AD = 12 cm. , CD = 6 cm.

, ED = 5 cm. and $\overline{ED} \perp \overline{BC}$

Find the area of the parallelogram.



[b] Graph the figure ABCD where A (2 , 7) , B (3 , 4) , C (8 , 4) and D (7 , 7) What is the name of the figure ABCD ?

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5 ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represent these data.

Additional question

[a] Write in the list method the set : $X = \{x : x \in \mathbb{N} , 3 \leq x \leq 8\}$, then represent its element on the number line.

[b] Use the properties of addition to find the result of the following :

$82 + 75 + 18$

27 Aswan Governorate

Aswan Eductional Directorate
Edfu Language School

Answer the following questions :

1 ***Choose the correct answer from those given :***

[a] The number of axes of symmetry of the rhombus is (1 **or** zero **or** 2 **or** 4)

[b] If $3x = 15$, then x = ... (5 **or** 12 **or** $\frac{1}{5}$ **or** $\frac{1}{3}$)

[c] $\frac{1}{2}$ ☐ $\frac{1}{8}$ (< **or** = **or** >)

[d] The circle in which the length of the greatest chord is 14 cm. , its circumference = ... $\left(\pi = \frac{22}{7}\right)$ (3.5 **or** 14 **or** 22 **or** 44)

2 ***Complete each of the following :***

[a] Area of square = $\frac{1}{2}$ × ×

[b] The measure of a right angle = ...

[c] If we add 5 to three times of the number y , then we get the number

[d] The square whose diagonal length is 10 cm. , its area is cm^2

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3 **[a]** ABC is a triangle , its base length is 18 cm. and its height is 6 cm. , then find its area.

[b] ***Which is greater in area ?*** a rhombus the lengths of its diagonals are 8 cm. , 6 cm. , or the parallelogram in which the length of its base is 10 cm. and the corresponding height is 5 cm.

4 **[a]** ***Solve the following equation :*** $x + 3 = 12$

[b] In a coordinate plane, draw Δ ABC where A (2 , 3) , B (5 , 3) and C (5 , 7) , then draw the image of Δ ABC by reflection across $\overleftrightarrow{BC}$

5 **[a]** The parallelogram whose area is 36 cm^2 and the length of a side of it is 9 cm. , then find the corresponding height to this side.

[b] ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency histogram and frequency polygon which represent these data.

Additional question

Complete :

[a] The set of natural numbers more than 5 is

[b] 2 , 7 , 12 , 17 , ... , ... (in the same pattern)

[c] If $A \times 60 + A \times 4 = 3 \times 64$, then A = ...

[d] The multiplicative neutral element in $\mathbb{N}$ is

28 South Sinai Governorate — Dahab Educational Directorate

Answer the following questions :

1 ***Choose the correct answer :***

[a] The perimeter of square with side length x = ...

($4x$ *or* $x + 4$ *or* $\frac{x}{4}$ *or* $x - 4$)

[b] 6 added to the number y is ($6y$ *or* $y + 6$ *or* $y - 6$ *or* $\frac{y}{6}$)

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[c] If $x + 8 = 15$, then x = ... (3 **or** 7 **or** 6 **or** 5)

[d] The number of axes of symmetry of rhombus = ...

(zero **or** 1 **or** 2 **or** 4)

2 ***Complete the following :***

[a] The area of parallelogram = ... ×

[b] The area of triangle whose base length 8 cm. and height 5 cm.
= cm^2

[c] The place value of the digit 3 in the number 6.135 is

[d] If x is odd number then $x + 2$ is number.

3 [a] Find the circumference of a circle with diameter length 7 cm. $\left(\pi = \frac{22}{7}\right)$

[b] Complete : If $15 \times 34 = (5 + 10) \times x$, then x = ...

[c] Solve the equation : $3x + 7 = 19$

4 [a] In the Cartesian coordinate plane determine the following points
A (6 , 6) , B (6 , 2) , C (1 , 2) and D (1 , 6)
What's the name of the figure ?

[b] Find the area of rhombus whose diagonals lengths are 6 cm. and 8 cm.

5 ***The following table shows the marks of 35 students in math exam :***

Sets	10 –	20 –	30 –	40 –	**total**
Frequency	8	12	10	5	**35**

Represent these data by frequency polygon.

Additional question

Using the properties of commutation , distribution and associative in $\mathbb{N}$, find the value of each of the following :

(1) $8 \times 184 \times 125$ **(2)** $28 + 59 + 72 + 41$

(3) $137 \times 36 - 37 \times 36$

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29 Red Sea Governorate

Quesseir Educational Administration

Answer the following questions :

1 ***Complete :***

[a] The number of axes of symmetry of the rhombus = ...

[b] The perimeter of an equilateral triangle whose side length is L = ...

[c] If $4 + x = 15$, then x = ...

[d] The circle whose diameter length is 10 cm. , its circumference = ... cm. (where $\pi = 3.14$)

2 ***Choose the correct answer :***

[a] The triangle whose base length is 5 cm. , and the corresponding height of it is 6 cm. , its area = ... cm^2 (30 *or* 15 *or* 25 *or* 36)

[b] If $3x = 15$, then x = ... (5 *or* 12 *or* $\frac{1}{5}$ *or* $\frac{1}{3}$)

[c] Twice the number x subtracted 3 from it = ...

($x - 3$ *or* $2x + 3$ *or* $2x - 3$ *or* $3 - 2x$)

[d] The square whose diagonal length is 8 cm. its area = ... cm^2

(64 *or* 32 *or* 16 *or* 8)

3 [a] Find the area of a rhombus in which the length of its diagonals are 8 cm. and 6 cm.

[b] Solve the following equation : $x + 3 = 13$

4 [a] Find the area of a parallelogram in which the length of the base = 10 cm. , and its height = 5 cm.

[b] In the coordinate plane draw the triangle ABC where A (2 , 5) , B (5 , 2) and C (5 , 8) , then draw the image of the triangle ABC by reflection across $\overleftrightarrow{BC}$

5 ***The following frequency table shows the marks of 35 students in the exam :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	8	12	10	5	35

Draw the frequency polygon which represents these data.

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Additional question

Choose the correct answer :

[a] $\{3 , \frac{15}{4}\}$ $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

[b] The set of odd numbers the set of natural numbers.
($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

[c] If x is an odd number , then $x + 2$ is number
(odd **or** even **or** prime)

[d] If $7 \times 15 = 15 \times a$, then a = ... (15 **or** 7 **or** 10 **or** 5)

30 Matrouh Governorate

Matrouh Educational Directorate
Maths Inspection

Answer the following questions :

1 ***Complete the following :***

[a] If a radius of circle is (r) , then the circumference of a circle = $\pi \times$

[b] The sum of two number is 21 and one of them is x , then the other is

[c] If $7 \times 15 = 15 \times x$, then x = ...

[d] Area of parallelogram = ...

[e] If the diagonal length of a square is 10 cm. , then its area = ... cm^2

2 ***Choose the correct answer between brackets :***

[a] If the diagonals lengths of a rhombus 10 cm. , 12 cm. , then its area = ... cm^2 (120 **or** 60 **or** 24 **or** 32)

[b] Subtract 7 from double number x
($x-7$ **or** $2x-7$ **or** $7x+2$ **or** $14x$)

[c] Area of triangle in which the length of its base is 12 cm. and its height is 5 cm. = ... cm^2 (30 **or** 60 **or** 17 **or** 34)

[d] The diameter of circle = ... (r **or** 3 r **or** 4 r **or** 2 r)

[e] If $x + 8 = 15$, then x = ... (3 **or** 7 **or** 6 **or** 5)

3 **[a]** Find the area of a parallelogram in which length of its base is 15 cm. and its corresponding height is 4 cm.

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[b] ***Find the value of x which make the following equation correct :***

(1) $x - 3 = 9$

(2) $2x + 5 = 17$

4 ***In the coordinate plane :***

[a] Determine the position of the points A (8 , 5) , B (8 , 2) , C (5 , 2) , D (5 , 7)

[b] Draw line segments $\overline{AB}$, $\overline{AD}$, $\overline{CD}$, $\overline{BC}$

[c] If $\overleftrightarrow{CD}$ is a reflection axis of shape ABCD, find its image using the suitable symbole.

5 ***The following table shows marks of 40 students in math exam :***

Sets	10 –	20 –	30 –	40 –	50 –	**sum**
Frequency	5	7	12	9	7	**40**

Represent these data by histogram and frequency polygon.

Additional question

Use the properties of operations of natural numbers to find the result :

(1) $8 \times 47 \times 125$

(2) $56 \times 42 + 56 \times 58$

Rania Saeed

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Final Examinations

Some Schools' Examinations From Different Governorates

1 Cairo

El-Nozha Directorate of Education
Our Lady of Perpetual Succour School

Answer the following questions :

1 ***Complete the following :***

(a) If $X = \{x : x \in \mathbb{N} , 2 \leq x \leq 3\}$, then $X = \{\cdots\cdots\}$

(b) The square whose area is 72 cm^2 , the length of its diagonal = ... cm.

(c) 1 , 4 , 8 , 13 , ... (in the same pattern)

(d) If $945 = (x \times 100) + 45$, then $x =$

2 ***Choose the correct answer :***

(a) If E is the set of even number then E $\mathbb{N}$

($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The multiplicative neutral element in N is

(zero *or* 1 *or* 2 *or* 4)

(c) The area of a triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2 (30 *or* 15 *or* 25 *or* 36)

(d) If the longest chord in a circle is 7 cm. then the circumference of the circle is cm. where. $\left(\pi = \frac{22}{7}\right)$ (3.5 *or* 7 *or* 22 *or* 44)

3 (a) ***Use the properties of operations to find the result of :***

(1) $38 + 47 + 62 + 53$ **(2)** $8 \times 37 \times 125$

(b) Draw Δ ABC where A (2 , 5) , B (5 , 2) , C (5 , 8)
Then find its image by reflection on $\overleftrightarrow{BC}$

4 (a) ***Which is greater in area :***

A rhombus in which the lengths of its diagonals are 8 cm. and 6 cm. or a parallelogram in which the length of its base is 10 cm. and the corresponding height is 5 cm. then calculate the difference between them.

(b) ***Solve each of the following equations :***

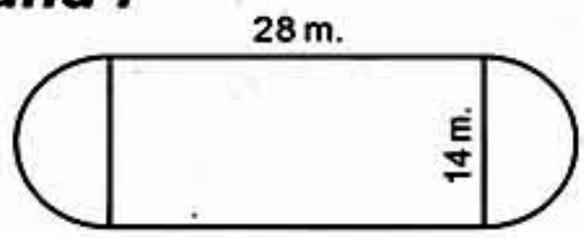
(1) $\frac{1}{6}x - 3 = 2$ **(2)** $3x + 7 = 19$

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Final Examinations

5 **(a)** ***The opposite figure shows a football playground :***
Find its perimeter $\left(\pi = \frac{22}{7}\right)$



(b) ***Represent the following distribution by histogram :***

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	6	5	12	8	9	40

2 Cairo

Nasr City Directorate
Talaee El-Kamal Islamic Language School

Answer the following questions :

1 ***Choose the correct answer :***

(a) Subtract 3 from twice the number x = ...
($x-3$ ***or*** $2x+3$ ***or*** $2x-3$)

(b) The number of axes of symmetry of the rhombus = ...
(0 ***or*** 1 ***or*** 2 ***or*** 4)

(c) If the set of even number is E , then E $\mathbb{N}$
($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(d) The diameter length of circle whose circumference 88 cm. = ... $\left(\pi = \frac{22}{7}\right)$
(28 ***or*** 14 ***or*** 7 ***or*** 21)

2 ***Complete the following :***

(a) The set of prime numbers which are less than 17 is

(b) If $x + 8 = 15$, $x \in \mathbb{N}$, then x = ...

(c) The area of a triangle whose base length 5 cm. and the corresponding height 6 cm. is cm^2.

(d) The multiplicative neutral element in $\mathbb{N}$ is

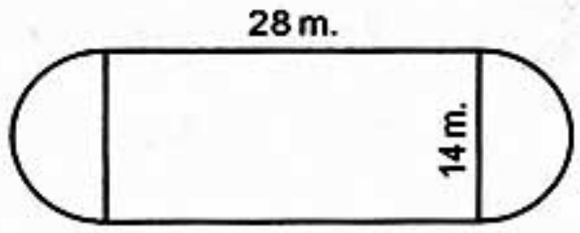
3 **(a)** ***Use the distribution property to find the value of :***
(1) 519×99 **(2)** 316×1001

(b) ***Which is greater in area :***
A rhombus in which the lengths of its diagonals are 6 cm. and 8 cm. or a parallelogram in which the length of its base is 10 cm. and the corresponding height is 5 cm. , then calculate the difference between them.

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4 (a) ***Calculate the perimeter of the opposite figure where*** $\left(\pi = \frac{22}{7}\right)$



(b) In the cartesian co-ordinate plane draw the figure ABCD where A (8 , 5) , B (8 , 2) , C (5 , 2) , D (5 , 7). If CD is the axis of reflection of the figure ABCD Draw the image of the figure ABCD.

5 (a) ***Solve each of the following equations :***

(1) $\frac{1}{6}x - 3 = 2$ (2) $2x + 9 = 21$

(b) ***The table below shows the frequency distribution of the number of work hours of 50 workers.***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represents these data.

Answer the following questions :

1 ***Complete the following :***

(a) If : A (2 , 3) and B (2 , 7) , then the midpoint of $\overline{AB}$ is (..... , ...)

(b) The additive neutral element in $\mathbb{N}$ is

(c) If $x + 8 = 15$, $x \in \mathbb{N}$, then x = ...

(d) 74 (73 + 27) = 74 × = ...

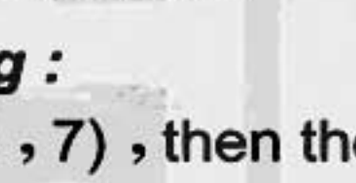
2 ***Choose the correct answer :***

(a) 3 + 9 $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) If : $X = \{x : x \in \mathbb{N} , 2 \leq x \leq 3\}$, then X = {.....}

({3 , 2} *or* {3} *or* {2} *or* $\varnothing$)

(c) A rhombus in which the length of its diagonals are 10 cm. and 12 cm. , its area = ... cm^2 (120 *or* 60 *or* 24 *or* 32)

(d) The opposite figure :  represents

(reflection *or* translation *or* rotation)

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Final Examinations

3 (a) (1) ***Evaluate using the commutative and associative properties :***

$8 \times 137 \times 125$

(2) ***Use the distributive property to find the value of :*** 36×1001

(b) ***Solve each of the following equations :***

(1) $x + 7 = 19$, $x \in \mathbb{N}$ (2) $3x = 21$, $x \in \mathbb{N}$

4 (a) ***Which is greater in area :***

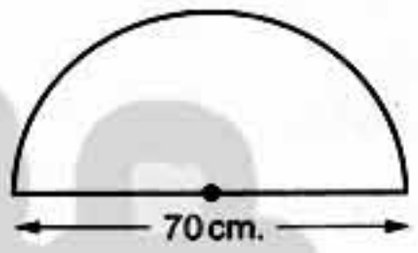
A square whose diagonal length is 10 cm. or a triangle whose base length is 12 cm. and its corresponding height is 6 cm.

(b) ***In the 2-dimensional coordinate plane locate the points :***

A (5 , 0) , B (9 , 0) , C (9 , 4) , D (5 , 4) , name the shape ABCD then find its image by reflection in $\overleftrightarrow{DC}$

5 (a) ***Find the perimeter of the opposite figure***

$(\pi = \frac{22}{7})$



(b) ***The following frequency table shows the marks of 35 students in the mathematics exam. Graph these data using the frequency polygon.***

Sets	5 –	10 –	15 –	20 –	25 –	Total
Frequency	5	9	11	6	4	35

4 Cairo

El-Salam Educational Zone
Anwar El-Sadat E.L.S.

Answer the following questions :

1 ***Choose the correct answer :***

(a) The number of axes of symmetry of the rhombus = ... (0 *or* 1 *or* 2 *or* 4)

(b) If : $x + 2 = 5$, $x \in \mathbb{N}$, then x = ... (2 *or* 3 *or* 5 *or* 4)

(c) $\mathbb{N} - E$ = ... ($\mathbb{N}$ *or* O *or* E *or* P)

(d) $39 \times 115 = 39 \times 100 + 39 \times$ (115 *or* 10 *or* 5 *or* 15)

2 ***Complete the following :***

(a) 1000 , 100 , 10 , ... , ... (In the same pattern)

(b) If : (4 , 7) = (2 a , b – 1) , then a = ... , b = ...

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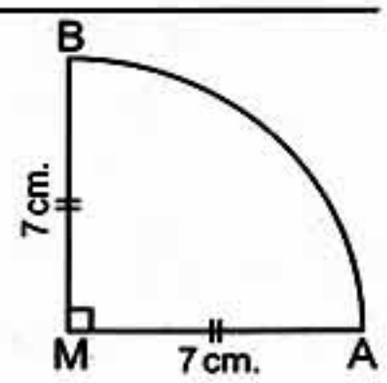
Final Examinations

(c) If we subtract 7 from twice the number x = ...

(d) The height of parallelogram with area 40 cm^2 and base length 5 cm. is

3 (a) ***Calculate the perimeter of the figure***

$\left(\pi = \frac{22}{7}\right)$



(b) ***Use operations properties in $\mathbb{N}$ to find :***

$25 \times 781 \times 4$

4 (a) ***Solve the equation :*** $3x + 8 = 29$, $x \in \mathbb{N}$

(b) ***Find the area of the square whose perimeter is 20 cm.***

5 (a) In a coordinate plane represent the points A (2 , 3) , B (3 , 5) , C (5 , 3)
Find the image of Δ ABC by reflection in $\overleftrightarrow{AC}$

(b) ***Represent by frequency polygon :***

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	6	5	12	8	9

5 Cairo

Helwan Educational Department
Elias Language School for Boys

Answer the following questions :

1 ***Complete the following :***

(a) $18 \times 15 = 15 \times$ (..... property)

(b) If "A" is an odd number , then "A + 2" is number.

(c) If $3x = 45$, then x = ...

(d) 20 , 19 ,17 , 14 , ... (in the same pattern)

2 ***Choose the correct answer :***

(a) A square of diagonal length 12 cm. , its area = ... cm^2

(120 ***or*** 144 ***or*** 72 ***or*** 36)

(b) The multiplicative neutral element in $\mathbb{N}$ is

(2 ***or*** 1 ***or*** zero ***or*** 10)

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(c) The smallest even counting number is

(zero *or* 1 *or* 2 *or* 4)

(d) Ali is "b" years old , then his age after 3 years is

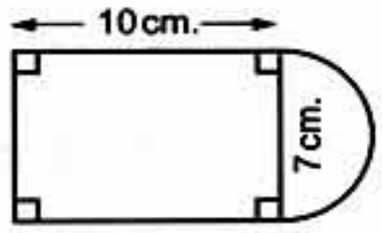
(b + 3 *or* b – 3 *or* 3b *or* 3 – b)

3 (a) ***Solve in*** $\mathbb{N}$ ***:*** **(1)** $x - 3 = 7$ **(2)** $2x + 9 = 21$

(b) ***Which is greater in area :*** A parallelogram of base length 8 cm. and height 6 cm. , or a triangle of base length 10 cm. and height 8 cm.

4 (a) ***Find perimeter of the following figure***

$\left(\pi = \frac{22}{7}\right)$



(b) In the coordinate plane , draw the triangle XYZ , in which X (2 , 4) , Y (5 , 2) and Z (5 , 6) , then find its image by reflection in $\overleftrightarrow{YZ}$

5 (a) ***Use properties in*** $\mathbb{N}$ ***to Find :***

(1) $25 \times 19 \times 4$ **(2)** 12×105 (using distribution property)

(b) ***Represent the following data by the frequency polygon :***

Sets	2 –	4 –	6 –	8 –
Frequency	8	9	5	11

6 Cairo

Rod El-Farag Directorate
El-Sayeda Aisha Language School

Answer the following questions :

1 ***Choose the correct answer :***

(a) The sum of two natural number $\mathbb{N}$ ($\subset$ *or* $\not\subset$ *or* $\in$ *or* $\notin$)

(b) If $3x = 15$, $x \in \mathbb{N}$, then x = ... (5 *or* 12 *or* $\frac{1}{5}$ *or* $\frac{1}{3}$)

(c) The circumference of a circle with diameter 21 cm. is $\left(\pi = \frac{22}{7}\right)$

(128 *or* 32 *or* 66 *or* 1024)

(d) The number of axes of symmetry of the rhombus = ...

(1 *or* 2 *or* 3 *or* 4)

2 ***Complete the following :***

(a) The additive neutral element in $\mathbb{N}$ is = ...

(b) The multiplicative neutral element in the natural numbers plus 99

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Final Examinations

(c) Double the number x subtracted 7 from it equal

(d) The length of the diagonal of a square is 12 cm. then its area = ... cm^2.

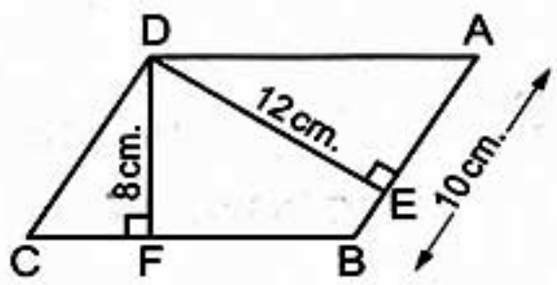
3 (a) ***Using the properties of commutation , distribution and associative , find the value of each :*** **(1)** $8 \times 137 \times 125$ **(2)** $28 + 59 + 72$

(b) ***Solve the equation :*** $2x + 9 = 21 \quad x \in \mathbb{N}$

4 (a) The opposite figure ABCD is a parallelogram , AB = 10 cm. , DE = 12 cm. , DF = 8 cm. . ***Find***

(1) The area of parallelogram ABCD

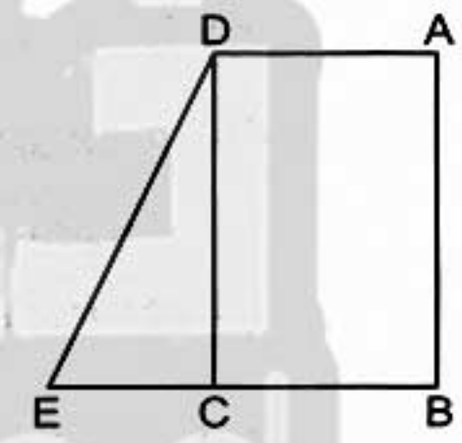
(2) Length of $\overline{BC}$



(b) In the cartesian co-ordinates plane determine the point A (2 , 2) , B (5 , 2) , C (5 , 8) , D (2 , 8). If $\overleftrightarrow{BC}$ the axis of reflection of the figure ABCD , then determine the image of the figure ABCD

5 (a) ABCD is a rectangle of area 828 cm^2. , $E \in \overrightarrow{BC}$, AD = 23 cm. , BE = 35 cm. ,

Find the area of Δ DCE



(b) ***The following table shows the marks of pupils in mathematics exam :***

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	A	7	40

(1) Find the value of A

(2) Draw the frequency histogram which represent these data

Answer the following questions :

1 ***Choose the correct answer :***

(a) {3.5} $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The sum of twice a number and 6 = ...

($x + 6$ *or* $2x + 6$ *or* $\frac{1}{2}(x + 6)$ *or* $2(x + 6)$)

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(c) The number of axes of symmetry of the square is axes.
(2 *or* 3 *or* 4 *or* 5)

(d) The circumference of circle = ...
(πr *or* $2\pi r$ *or* $3\pi r$ *or* $4\pi r$)

2 ***Complete the following :***

(a) 26 , 20 , 15 , 11 , ... , ... (in the same pattern)

(b) $40 \times 115 = 39 \times 115 + 115 \times$

(c) If the area of a parallelogram is 40 cm^2 and its base 8 cm. then its corresponding height equals cm.

(d) If $x \times 5 = 15$, then $2x =$

3 (a) ***By using properties of addition find :*** 137 + 475 + 163 + 225

(b) ***Solve the following equation :*** $2x - 7 = 5$ (Where $x \in \mathbb{N}$)

4 (a) ***Which is greater in area :*** A rhombus whose diagonal lengths are 12 cm. and 16 cm. or a square whose diagonal length is 14 cm. (show your steps).

(b) On the coordinate plane draw the rectangle ABCD where A (1 , 1) , B (4 , 1) , C (4 , 5) and D (1 , 5) , then draw its image by reflection in $\overleftrightarrow{BC}$

5 (a) Calculate the circumference of the circle whose diameter is 14 cm. $\left(\pi = \frac{22}{7}\right)$

(b) ***Represent the following distribution by frequency polygon :***

Sets	5 –	15 –	25 –	35 –	45 –
Frequency	6	8	12	7	4

8 Cairo

New Cairo Directorate
Experimental School

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\frac{2}{3}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\not\subset$ *or* $\subset$)

(b) If : $x + 1 = 6$, then $3x =$ (5 *or* 7 *or* 15 *or* 51)

(c) The diagonal length of a square is 6 cm. then its area is cm^2
(6 *or* 16 *or* 18 *or* 36)

(d) The difference between twice a number x and 8 = ...
($8 - 2x$ *or* $2x - 8$ *or* $\frac{1}{2}x - 8$ *or* $x - 8$)

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Final Examinations

2 ***Complete the following :***

(a) $3 \times (2 + 5) = 3 \times$ $+ 3 \times$

(b) The rhombus has lines of symmetry.

(c) The smallest natural number is

(d) A circle of radius length 7 cm. then its circumference = ... cm.

3 (a) ***Use the properties of multiplication to calculate the value :***
$125 \times 19 \times 8$

(b) If we subtracted 5 from three times a number the result will be 7
What's the number ?

4 (a) ***Which is greater in area :*** A triangle whose base length 18 cm. and height 12 cm. or a rhombus with diagonals lengths 24 cm. and 8 cm.

(b) Draw the figure ABCD in the coordinate plane where A (1 , 2) , B (1 , 5) , C (4 , 5) , D (4 , 2).

(1) What is the name of the figure ABCD ?

(2) How many lines of symmetry of this figure ?

5 (a) ***Find the radius length of circle whose circumference 154 cm.*** $\left(\pi = \frac{22}{7}\right)$

(b) ***The following table shows the marks of 50 pupils.***

Sets	2 –	4 –	6 –	8 –	10 –
Frequency	10	9	12	8	11

Represent these data by histogram.

Answer the following questions :

1 ***Complete the following :***

(a) The set of natural numbers less than 5 is

(b) If : $7 \times 15 = 15 \times x$, then $x =$

(c) Area of square = $\frac{1}{2} \times$

(d) The number of symmetry axes of an equilateral triangle is

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2 ***Choose the correct answer :***

(a) (3 + 9) $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The set of even numbers the set of natural numbers.
($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(c) x is an odd number , then $x + 2$ is number.
(even *or* odd *or* prime *or* otherwise)

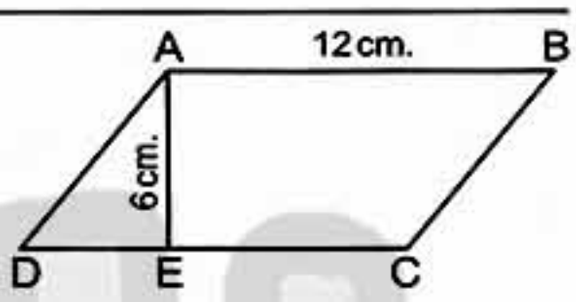
(d) A rhombus of diagonals length 10 cm. and 12 cm. its area = ... cm^2.
(120 *or* 60 *or* 24 *or* 32)

3 (a) ***Solve :*** $2x + 9 = 21$, where $x \in \mathbb{N}$

(b) ***Using the properties of addition in $\mathbb{N}$ to find :*** 872 + 199 + 128 + 801

4 (a) ***From the opposite figure :***

Find the area of the parallelogram ABCD



(b) Graph the figure ABCD where A (2 , 7) , B (3 , 4) , C (8 , 4) and D (7 , 7)
What is the name of the figure ABCD ?

5 (a) Find the circumference of the circle with diameter length 14 cm. $\left(\pi = \frac{22}{7}\right)$

(b) ***Represent the following distribution by frequency polygon :***

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	5	7	12	9	7

10 Giza

El-Doki Directorate
El-Orman Ex. Language School

Answer the following questions :

1 ***Complete the following :***

(a) The multiplicative identity element in $\mathbb{N}$ is

(b) For any natural numbers a , b and c where $(a \times b) \times c = a \times (b \times c)$ this called property.

(c) If the side length of a square is 10 cm. then its area

(d) $23 \times (92 + 8) = 23 \times$ = ...

(e) The area of a parallelogram whose base length is 8 cm. and height 2.5 cm. is cm^2.

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2 ***Choose the correct answer :***

(a) If the longest chord in a circle is 7 cm. , then the circumference of the circle is cm. where $\left(\pi = \frac{22}{7}\right)$ (3.5 **or** 7 **or** 22 **or** 44)

(b) If : $x + 7 = 19$, $x \in \mathbb{N}$ then x = ... (26 **or** 12 **or** 11 **or** 13)

(c) The area of a square whose diagonal length 6 cm. is
(18 cm^2 **or** 36 cm^2 **or** 12 cm.)

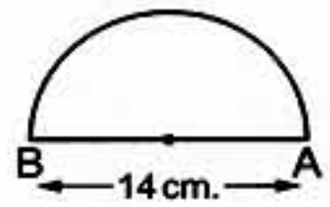
(d) If : $3x = 15$, $x \in \mathbb{N}$ then x = ... (5 **or** 12 **or** $\frac{1}{5}$ **or** $\frac{1}{3}$)

(e) $(49 \div 8)$ $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

3 ***Use the properties to find the value of :*** 28 + 78 + 782

4 ***In the opposite figure :***

The length of the diameter $\overline{AB}$ of a semicircle is 14 cm.
Find the distance around the figure $\left(\pi = \frac{22}{7}\right)$



5 ***Represent these data by the frequency polygon :***

Sets	5 –	10 –	15 –	20 –	25 –
Frequency	6	12	19	12	4

11 Giza South Giza Educational Zone
Mathematics Department

Answer the following questions :

1 ***Choose the correct answer :***

(a) The area of a rhombus whose diagonal lengths are 3 cm. and 4 cm. is cm^2. (24 **or** 6 **or** 12 **or** 20)

(b) If : $x + 8 = 12$, $x \in \mathbb{N}$ then x = ...
(4 **or** 12 **or** 20 **or** 64)

(c) 1 , 4 , 9 , 16 , ... (in the same pattern) (19 **or** 23 **or** 25 **or** 32)

(d) $\frac{24}{4}$ $\mathbb{N}$ ($\in$ **or** $\notin$ **or** $\subset$ **or** $\not\subset$)

2 ***Complete the following :***

(a) The sum of two numbers is 35 , one of them is x then the other is

(b) The least natural number is

(c) 53 + 48 + 47 = (53 + ...) + 48 = ...

(d) If x is an even number , then $x + 3$ is number.

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Final Examinations

3 (a) ***Solve the equation :*** $2x + 9 = 21$, $x \in \mathbb{N}$

(b) Write by the listing method $X = \{x : x \in \mathbb{N} , 3 < x < 8\}$ then represent its elements on the number line.

4 (a) The diagonal length of a square is 6 cm. ***Find its area.***

(b) In a 2-dimensional coordinate plane. Draw the point A (2 , 2) , B (5 , 2) , C (5 , 8) and D (2 , 8)

5 (a) Find the circumference of a circle. If its diameter is 7 cm. $\left(\pi = \frac{22}{7}\right)$

(b) ***The following table shows the frequency distribution of the number of work hours of 50 workers.***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represents these data.

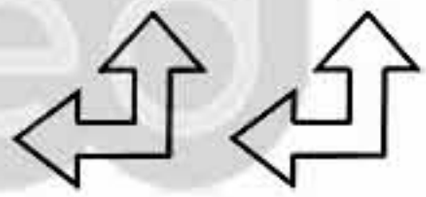
12 Giza — Abo El-Nomros Zone E.L.S.

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\frac{1}{5}$ $\mathbb{N}$ ($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(b) The opposite geometric transformation is



(reflection ***or*** translation ***or*** rotation)

(c) Youssef is x years old , then Youssef's age after 2 years will be

($2x$ ***or*** $2 - x$ ***or*** $x + 2$ ***or*** $x - 2$)

(d) The circumference of a circle with diameter length 42 cm. is cm. Where $\left(\pi = \frac{22}{7}\right)$ (48 ***or*** 96 ***or*** 168 ***or*** 132)

2 ***Complete the following :***

(a) If : $x + 4 = 10$, then x = ...

(b) 1 , 3 , 9 , ... , ... (in the same pattern)

(c) The additive identity element is

(d) The number of axes of symmetry of the rectangle = ...

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كتاب المعاصر موقع ذاكرولى التعليمى الصف الخامس الابتدائى

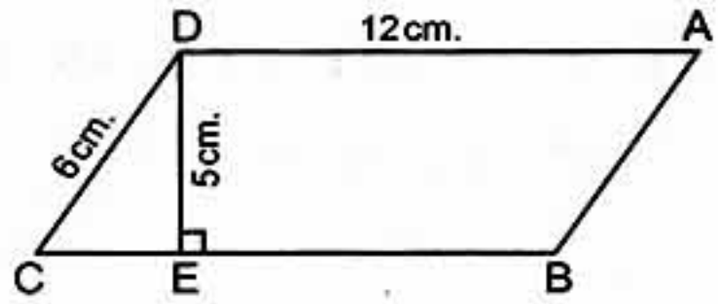
Final Examinations

3 (a) ***In the opposite figure :***

ABCD is a parallelogram ,

where AD = 12 cm. , ED = 5 cm.

Find the area of the parallelogram.



(b) ***Using the additive properties find the result :*** 38 + 47 + 62 + 53

4 Draw the triangle ABC where A (1 , 3) , B (4 , 1) , C (4 , 7) , then draw the image of the triangle ABC by reflection in $\overleftrightarrow{BC}$

5 (a) ***Solve the equation :*** $2x - 4 = 12$

(b) ***Represent the following data by the histogram :***

Sets	5 –	7 –	9 –	11 –
Frequency	4	12	9	1

13 Alexandria Central Educational Zone E.L.S.

Answer the following questions :

1 ***Choose the correct answer :***

(a) If : $x + 8 = 15$, $x \in \mathbb{N}$ then $x =$ (23 ***or*** 7 ***or*** 6 ***or*** 5)

(b) The square whose diagonal length is 8 cm. , its area = ... cm^2.

(64 ***or*** 32 ***or*** 16 ***or*** 8)

(c) If : $X = \{x : x \in \mathbb{N} , 3 \leq x < 5\}$, then $x \in$

({4} ***or*** {3} ***or*** {3 , 4} ***or*** {4 , 5})

(d) $24 \times 10 = 24 \times 6 + 24 \times$ (24 ***or*** 6 ***or*** 10 ***or*** 4)

2 ***Complete the following :***

(a) The set of prime numbers which are less than 17 is

(b) The perimeter of a rectangle is 16 cm. its width is 3 cm. then its area = ... cm^2.

(c) The sum of two numbers is 35 , one of them is x , then the other is

(d) A rhombus has two diagonals of length 6 cm. and 8 cm. , then its area = ... cm^2.

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الصف الخامس الابتدائى



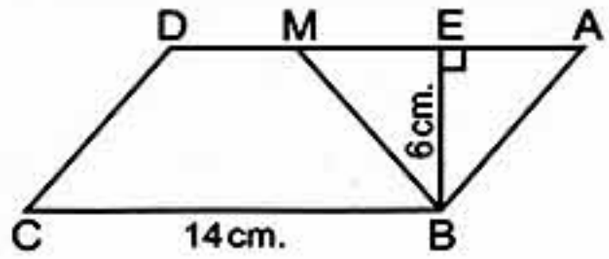
3 (a) ***Using the properties of commutation and association find the value of each of the following :*** **(1)** $28 + 59 + 72$ **(2)** $8 \times 137 \times 125$

(b) In the cartesian co-ordinate plane locate the points A (2 , 1) , B (5 ,1) , C (5 , 4) , then draw the image of Δ ABC by reflection on $\overleftrightarrow{BC}$

4 ***In the opposite figure :***

ABCD is a parallelogram in which BC = 14 cm. ,

BE = 6 cm. , M is the mid-point of $\overline{AD}$. ***Find :***



(a) The length of $\overline{AD}$ and $\overline{AM}$

(b) The area of parallelogram ABCD

(c) The area of Δ ABM

(d) The area of the figure MBCD

5 (a) ***Solve the following equation :*** $2x + 9 = 21$, $x \in \mathbb{N}$

(b) ***The following table shows the frequency distribution of the number of work hours of work.***

Sets	20 –	30 –	40 –	50 –	60 –	Total
Frequency	6	10	14	7	3	40

Draw the frequency polygon which represent these data.

14 Alexandria

El-Montazah Educational Zone
Maths Supervision

Answer the following questions :

1 ***Complete the following :***

(a) $8 \times$ = ... $\times 8 = 32$ (b) If : $a \in \mathbb{N}$, and $b \in \mathbb{N}$, then $a \times b$ $\mathbb{N}$

(c) If : $x \in \mathbb{N}$, $2x - 3 = 7$, then $x =$

(d) The area of a square whose side length is 8 cm. = ... cm^2

2 ***Choose the correct answer :***

(a) 3.5 $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) $(7 \times 2) \times 4 =$ $\times (2 \times 4)$ (3 *or* 5 *or* 7 *or* 9)

(c) If the diameter of a circle is 7 cm. , then the circumference = ... cm. $\left(\pi = \frac{22}{7}\right)$ (11 *or* 22 *or* 44 *or* 66)

(d) The sum of two numbers 9 , one of them is x then the other is

($x - 9$ *or* $\frac{1}{9}x$ *or* $9x$ *or* $9 - x$)

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Final Examinations

3 (a) ***Use the distributive property of multiplication over addition to complete :*** $50 \times 8 + 50 \times 7 = 50$ (..... + ...) = $50 \times$ = ...

(b) The lengths of the diagonals of a rhombus are 30 cm. and 20 cm. Calculate its area.

4 (a) In the coordinate plane , draw the figure ABCD where A (3 , 1) , B (3 , 5) , C (7 , 5) and D (7 , 1) , ***what is the name of the figure ABCD ?***

(b) ***Solve the following equations :***

(1) $3x - 5 = 16$, $x \in \mathbb{N}$ (2) $x \div 2 = 2$, $x \in \mathbb{N}$

5 ***Use the following table of data to draw the frequency polygon :***

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	6	10	12	8	6

15 El-Kalyoubia

Educational Zone
Maths Supervision

Answer the following questions :

1 ***Choose the correct answer :***

(a) (3 + 9) $\mathbb{N}$. ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) If : $x - 2 = 5$, then x = ... (5 *or* 2 *or* 10 *or* 7)

(c) The area of a square whose diagonal length 10 cm. = ... cm^2.
(100 *or* 50 *or* 60 *or* 80)

(d) The multiplicative identity in $\mathbb{N}$ is (1 *or* 0 *or* 2 *or* 3)

(e) The number of axes of symmetry of the rectangle = ...
(zero *or* 4 *or* 2 *or* 6)

2 ***Complete the following :***

(a) 32 + (59 + ...) = (32 + ...) + 68

(b) 1 , 4 , 8 , 13 , ... (In the same pattern)

(c) If $5x = 20$, then x = ...

(d) The area of a triangle whose base length is 5 cm. and the corresponding height of it is 4 cm. = ... cm^2.

(e) If (x , 5) = (3 , y) , then x = ... , y = ...

3 (a) ***Use the properties of addition to find the value of :*** 34 + 57 + 66 + 43

(b) ***Use the distributive property to find :*** $27 \times 48 + 27 \times 52$

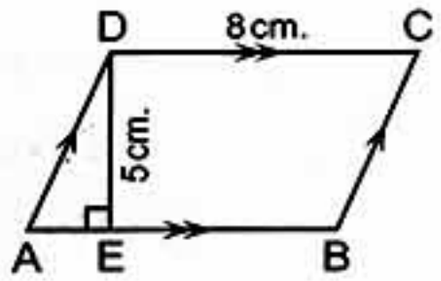
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كتاب المعاصر
موقع ذاكرولى التعليمى
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4 (a) ***Solve the equation :*** $2x + 3 = 23$, $x \in \mathbb{N}$

(b) ***In the opposite figure :***

Find the area of a parallelogram ,
in which AB = 8 cm. , DE = 5 cm. , $\overline{DE} \perp \overline{AB}$



5 ***Use the following table of data to make a histogram :***

Sets	10 –	20 –	30 –	40 –
Frequency	4	11	6	9

16 El-Sharkia

Directorate of Educational
Mathematics Supervision For E.L.S.

Answer the following questions :

1 ***Complete the following :***

(a) Area of parallelogram of base 5 cm. and height 4 cm. is cm^2

(b) $0 \div 5$ = ... (c) 1 , 4 , 7 , 10 , ... , ... (in the same pattern)

(d) If y = 4 , then 3 y = ...

2 ***Choose the correct answer :***

(a) $(x + 12)$ $(x + 15)$, $x \in \mathbb{N}$ (< ***or*** > ***or*** = ***or*** ≥)

(b) The opposite geometric transformation is



(reflection. ***or*** translation. ***or*** rotation.)

(c) Area of square of diagonal 10 cm. = ...

(100 cm. ***or*** 100 cm^2. ***or*** 50 cm. ***or*** 50 cm^2.)

(d) $(4 \times$ $) \times 78 = 7\,800$ (10 ***or*** 100 ***or*** 400 ***or*** 25)

3 (a) In the 2-dimensions coordinate plane locate the points A (2 , 1) , B (5 , 1) , C (5 , 4) , D (2 , 4) Draw the figure ABCD and name it.

(b) Find the midpoint of $\overline{AB}$ if A (0 , 4) and B (8 , 4)

(c) Find the height of triangle if its area 50 cm^2. and its base length is 20 cm.

4 (a) ***Calculate the circumference of the circle which its diameter length 14 cm.*** $\left(\pi = \frac{22}{7}\right)$

(b) ***Using the properties in $\mathbb{N}$ to find the result of :***

(1) 79 + 36 + 21 + 64 (2) $4 \times 17 \times 25$

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Final Examinations

5 **(a)** ***Solve the equation :*** $x + 3 = 8$, $x \in \mathbb{N}$

(b) ***Represent the following table by frequency polygon :***

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	8	10	11	9	6

Answer the following questions :

1 ***Choose the correct answer :***

(a) $(5 - 7)$ $\mathbb{N}$. ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) If : $y\,(35 + 10) = 8 \times 45$, then $y =$, where $y \in \mathbb{N}$

(45 *or* 35 *or* 10 *or* 8)

(c) The area of the rhombus whose diagonal lengths are 10 cm. and 15 cm. = ... cm^2. (150 *or* 75 *or* 50 *or* 25)

(d) If 7 is subtracted from twice the number x , then the symbolic expression for this situation is

($7 - x$ *or* $7 - 2x$ *or* $2x - 7$ *or* $3x - 7$)

2 ***Complete the following :***

(a) $52 + (61 +$ $) = (52 + 48) +$

(b) The perimeter of the square whose side length is k cm. = ... cm.

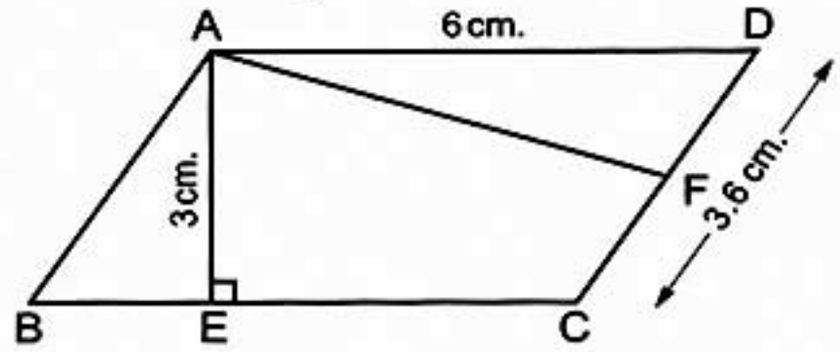
(c) The number of axes of symmetry of the isosceles trapezium = ...

(d) The area of the square = $\frac{1}{2}$ $\times$

3 **(a)** ***Which is greater in area :*** The rhombus whose side length is 9 cm. and height = 8 cm. or the triangle whose base length is 14 cm. and height = 9 cm.

(b) ***In the opposite figure :***

ABCD is a parallelogram in which AD = 6 cm. , AE = 3 cm. , CD = 3.6 cm.



Find : **(1)** The area of the parallelogram ABCD **(2)** The length of $\overline{AF}$

4 **(a)** On the coordinate plane , draw the triangle ABC where A (4 , 1) , B (4 , 6) and C (7 , 4) , then draw its image by reflection in $\overleftrightarrow{AB}$

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(b) *Use the properties of $\mathbb{N}$ to find the result of :*

(1) $247 + 52 + 253 + 48$ **(2)** 7×98

5 **(a) *Solve the following equations where $x \in \mathbb{N}$:***

(1) $2x - 1 = 7$ **(2)** $x + 8 = 15$

(b) *The following table shows the marks of 50 pupils in a Maths test :*

Marks	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

Represent these data by a frequency polygon.

18 El-Dakahlia

Mathematics Supervision
E.L.S.

Answer the following questions :

1 ***Complete the following :***

(a) If x is the smallest odd prim number then $x - 1$ = ...

(b) If $(x + 3) \times 17 = 17 \times 8$, then x = ...

(c) The smallest prime number × any prime number = ... number.

(d) The circumference of a circle ÷ its diameter = ...

2 ***Choose the correct answer :***

(a) Twice the sum of the number x and three = ...

($2x + 3$ ***or*** $2(x + 3)$ ***or*** $5x$ ***or*** $3x + 2$)

(b) For any two natural numbers x and y , then $(x - y)$ is possible only if

x y ($>$ ***or*** $\leq$ ***or*** $\geq$ ***or*** $<$)

(c) If the area of a square = 50 cm^2 then the length of its diagonal = ... cm.

(25 ***or*** 5 ***or*** 10 ***or*** 15)

(d) The number of symmetry axes of an equilateral triangle = ...

(0 ***or*** 1 ***or*** 2 ***or*** 3)

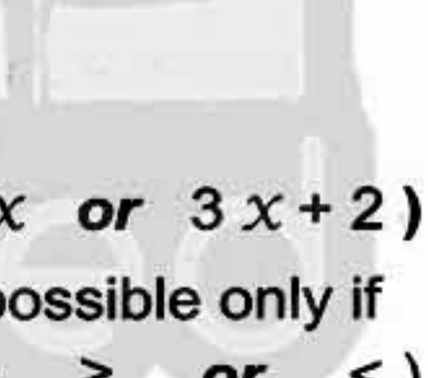
3 ***In the opposite figure :***

(a) Δ BEF is the image of Δ AEF by reflection across $\overleftrightarrow{\quad}$

(b) By reflection across $\overleftrightarrow{FD}$ the image of Δ FBD is Δ

(c) Δ FBA is congruent Δ

(d) The area of Δ FDB = ... / from the area of Δ ABC



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Final Examinations

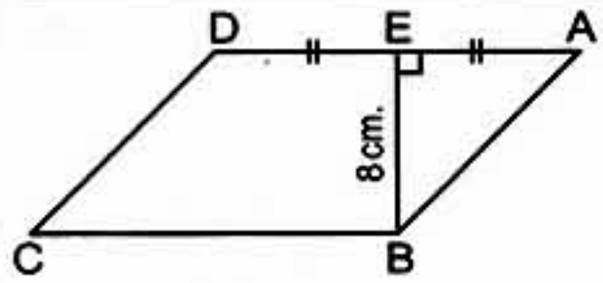
4 (a) ***Solve the equation :*** $\frac{1}{2}x + 7 = 11$, where $x \in \mathbb{N}$

(b) ***By using properties calculate :*** **(1)** $125 \times 328 \times 8$ **(2)** $28 \times 18 - 28 \times 8$

5 (a) The area of parallelogram ABCD is 96 cm^2.

Calculate the area

of the figure EBCD



(b) ***The following table represents the marks of 50 pupils on the math exam :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

Draw the frequency polygon which represents the given data.

Answer the following questions :

1 ***Complete the following :***

(a) The smallest natural number is (b) If $2x = 6$, then $x =$

(c) If the area of a parallelogram is 36 cm^2 and the length of its base = 9 cm. then the length of its height = ... cm.

(d) If $(x + 2) \times 15 = 5 \times 15$, then $x =$

2 ***Choose the correct answer :***

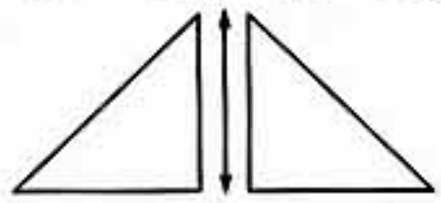
(a) The age of a man now is x then his age after 5 years = ...

(x ***or*** $x+5$ ***or*** $x-5$ ***or*** $2x$)

(b) (5 – 7) $\mathbb{N}$ ($\subset$ ***or*** $\not\subset$ ***or*** $\in$ ***or*** $\notin$)

(c) If the base length of a triangle is 6 cm .and its corresponding height = 4 cm. then its area equal cm^2. (10 ***or*** 24 ***or*** 12 ***or*** 2)

(d) The opposite transformation represents



(flip ***or*** turn ***or*** slide)

3 (a) ***By using properties of addition and multiplication find :***

(1) 28 + 59 + 72 + 41 **(2)** $8 \times 137 \times 125$

(b) ***Which is greater in area :*** A square with diagonal length 10 cm. or a rhombus whose diagonals length 12 cm. and 10 cm.

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الصف الخامس الابتدائى موقع ذاكرولى التعليمى كتاب المعاصر



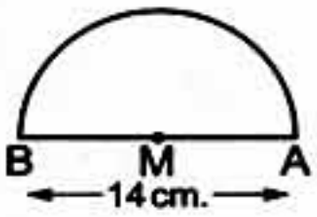
4 (a) ***Solve the equations in*** $\mathbb{N}$ ***:***

(1) $2x + 9 = 21$ **(2)** $x - 3 = 5$

(b) In the two dimensions Cartesian coordinates drew Δ ABC where A (1 , 3) , B (4 , 3) and C (4 , 6) , then find its image by reflection on $\overleftrightarrow{BC}$

5 (a) ***Find the perimeter of the opposite figure :***

$\left(\pi = \frac{22}{7}\right)$



(b) ***The following table show the daily wages of workers in a company :***

Sets	20 –	30 –	40 –	50 –	60 –	Total
Frequency	8	10	16	12	4	50

Draw the frequency polygon which represent these data.

Answer the following questions :

1 ***Choose the correct answer :***

(a) If O is the set of odd number , then O $\mathbb{N}$

($\subset$ *or* $\in$ *or* $\not\subset$ *or* $\notin$)

(b) If x is an odd number , then $x + 2$ is

(even. *or* odd. *or* prime *or* otherwise.)

(c) Twice the number x subtracted 7 from it = ...

($7 - x$ *or* $2x - 7$ *or* $7x + 2$ *or* $14x$)

(d) A rhombus of area 30 cm^2 , the length of one of its diagonals is 6 cm. , then the other diagonal = ... cm. (4 *or* 6 *or* 8 *or* 10)

2 ***Complete the following :***

(a) The multiplicative neutral element in $\mathbb{N}$ is

(b) The square whose area is 72 cm^2 , the length of its diagonal = ... cm.

(c) 1 , 4 , 8 , 13 , ... (in the same pattern)

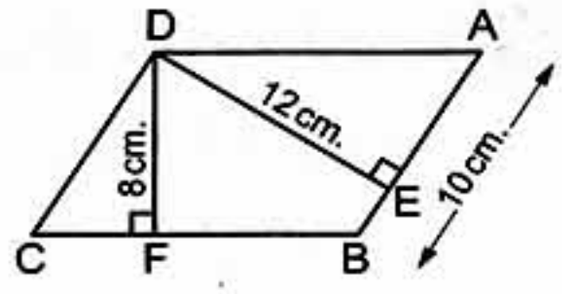
(d) The set of the natural number which are more than 4 and less than 5 is

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Final Examinations

3 (a) ***In the opposite figure :***

ABCD is a parallelogram in which AB = 10 cm. ,
DE = 12 cm. , DF = 8 cm. ***Find :***



(1) The area of the parallelogram ABCD

(2) The length of $\overline{BC}$

(b) ***Using the properties of commutation , distribution and association***
Find the value of each of the following :

(1) $8 \times 137 \times 125$ = ... **(2)** 28 + 59 + 72 = ...

4 (a) ***Solve the equation :*** $2x + 9 = 21$, $x \in \mathbb{N}$

(b) ***Complete :*** The diameter length of a circle whose circumference = 88 cm. equals cm. $\left(\pi = \frac{22}{7}\right)$

5 (a) In the Cartesian coordinates plane determine the points A (2 , 2) , B (5 , 2) , C (5 , 8) , D (2 , 8) if $\overleftrightarrow{BC}$ is the axis of reflection of the figure ABCD then determine the image of the figure ABCD

(b) ***The following table shows the marks of 35 pupils in mathematics exam in one of months where the full mark is 50***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	8	12	10	5	35

Draw the frequency polygon which represents these data.

21 Port Said

Education Directory
Port Said Experimental Language School

Answer the following questions :

1 ***Complete the following :***

(a) a + b = b + ...
(b) The smallest counting number is
(c) Area of triangle = ...
(d) 3 , 9 , 27 , ...

2 ***Choose the correct answer :***

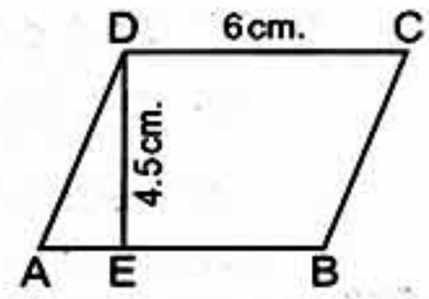
(a) 1.58 $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)
(b) $3x = 15$, then x = ... (3 *or* 4 *or* 5 *or* 12)
(c) The additive identity element is in $\mathbb{N}$ (1 *or* 2 *or* 3 *or* 4)
(d) $E \cap O$ = ... ($\varnothing$ *or* E *or* O *or* P)

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Final Examinations

3 (a) ***Find the area of the following parallelogram.***



(b) ***Solve the following equation :*** $x + 3 = 18 \quad x \in \mathbb{N}$

4 (a) ***Use the multiplicative properties to find :*** 22×102

(b) ***Use the additive properties to find :*** $47 + 75 + 53 + 25$

5 (a) On a coordinate plane draw the triangle ABC in which A (4 , 5) , B (6 , 5) , C (4 , 2) , then draw its image by reflection on $\overleftrightarrow{AB}$

(b)

Number of hours	5 –	10 –	15 –	20 –	25 –
Persons	6	10	12	10	4

Draw this data by a frequency polygon.

22 El-Beheira

Bandar Kafr El-Dawar Educational Zone
Maths supervision

Answer the following questions :

1 ***Complete the following :***

(a) The additive neutral element in $\mathbb{N}$ is , while the multiplicative neutral element in $\mathbb{N}$ is

(b) The area of parallelogram whose base length 8 cm. and its height 3 cm. is cm^2.

(c) 1 , 1 , 2 , 3 , 5 , ... , ... (in the same pattern)

(d) The square has lines of symmetry.

2 ***Choose the correct answer :***

(a) Twice the number x subtracted 3 from it = ...

($x-3$ ***or*** $2x+3$ ***or*** $2x-3$ ***or*** $3-2x$)

(b) If : $3x = 15$, $x \in \mathbb{N}$, then x = ... (5 ***or*** 12 ***or*** $\frac{1}{3}$ ***or*** $\frac{1}{5}$)

(c) The area of a rhombus whose diagonals lengths are 6 cm. and 8 cm. is cm^2.

(48 ***or*** 12 ***or*** 40 ***or*** 24)

(d) The product of two natural numbers $\mathbb{N}$.

($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

3 (a) ***Use the properties of operations in $\mathbb{N}$ to find the result of :***

(1) 34×99 (2) $45 + 36 + 55 + 64$

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Final Examinations

(b) ***In the coordinate plane represent the points :***

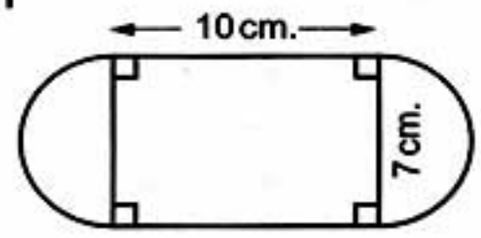
A (2 , 3) , B (3 , 5) and C (5 , 3) , then find the image of Δ ABC by reflection in $\overleftrightarrow{AC}$

4 (a) ***Solve the following equations in*** $\mathbb{N}$ ***:***

(1) $x + 3 = 12$ (2) $2x - 9 = 21$

(b) ***Calculate the perimeter of the opposite figure :***

Where $\left(\pi = \frac{22}{7}\right)$



5 (a) ***Which is greater in area ?***

A triangle whose base length is 12 cm. and its corresponding height = 8 cm. or a square of side length 7 cm.

(b) ***Represent these data using a histogram :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	8	12	10	5	35

Answer the following questions :

1 ***Complete the following :***

(a) The smallest natural number is

(b) 3 , 9 , 27 , ... , ... (in the same pattern)

(c) The number of axes of symmetry of the square = ...

(d) If : $15 - x = 9$, then x

2 ***Choose the correct answer :***

(a) Double the number x subtracted 7 from it = ...

($x - 7$ ***or*** $2x - 7$ ***or*** $7x + 2$ ***or*** $14x$)

(b) The area of a rhombus whose diagonals lengths are 4 cm. and 10 cm. = ... cm^2.

(40 ***or*** 80 ***or*** 20 ***or*** 10)

(c) The circumference of a circle = ...

($2\pi d$ ***or*** πr ***or*** $4\pi r$ ***or*** $2\pi r$)

(d) {2 , 3 , 0 , 4} $\mathbb{N}$. ($\subset$ ***or*** $\in$ ***or*** $\not\subset$ ***or*** $\notin$)

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Final Examinations

3 (a) The length of the base of a triangle is 6 cm. and its height is 4 cm.

Find the area of this triangle.

(b) In the orthogonal Cartesian coordinates locate the points

A (3 , 5) , B (6 , 5) , C (3 , 2) then find the length of $\overline{AC}$

4 (a) ***By using the properties of operations in $\mathbb{N}$. Find the result of the following :*** $4 \times 49 \times 25 =$

(b) ***Solve the equation :*** $3x + 8 = 29$

5 (a) ***Find the area of a parallelogram whose base length 10 cm. and height 3 cm.***

(b) ***Use the following table of data to make the histogram :***

Sets	5 –	7 –	9 –	11 –
Frequency	4	12	9	8



Answer the following questions :

1 ***Complete the following :***

(a) If : $x + 8 = 15$, $x \in \mathbb{N}$, then $x =$

(b) The square whose area is 72 cm^2 , the length of its diagonal = ...

(c) The diameter length of the circle whose circumference is 88 cm. equals cm.

(d) $32 + (59 +$$) = (32 + 68) +$

2 ***Choose the correct answer :***

(a) The number of axes of symmetry of the rhombus = ...

(zero ***or*** 1 ***or*** 2 ***or*** 4)

(b) (3 + 9) $\mathbb{N}$ ($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(c) The triangle whose base length is 5 cm. , and the corresponding height is 6 cm. its area = ... cm^2 (30 ***or*** 15 ***or*** 25 ***or*** 36)

(d) Twice the number x subtracted 3 from it = ...

($x - 3$ ***or*** $2x + 3$ ***or*** $2x - 3$ ***or*** $3 - 2x$)

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Final Examinations

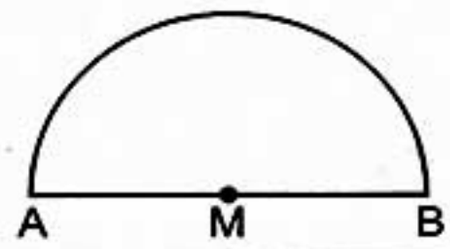
3 ***In the coordinate plane draw the triangle ABC where :***

A (1 , 2) , B (3 , 2) and C (3 , 4) then draw the image of the triangle ABC by reflection on $\overleftrightarrow{BC}$

4 (a) ***Solve the equation :*** $2x + 5 = 9$, $x \in \mathbb{N}$

(b) ***Calculate the perimeter of the opposite figure :***

AM = 7 cm. $\left(\pi = \frac{22}{7}\right)$



5 ***The following table shows the frequency distribution of the number of work hours of 50 workers :***

Sets	4 –	6 –	8 –	10 –	Total
Frequency	12	8	16	14	50

Draw the frequency polygon which represents these data.

25 Assiut

Assiut Educational Directorate
Experimental Language School

Answer the following questions :

1 ***Choose the correct answer :***

(a) The multiplication neutral element in $\mathbb{N}$ is

(0 *or* 1 *or* 2 *or* 3)

(b) If : $x - 7 = 19$, $x \in \mathbb{N}$, then x = ...

(12 *or* 24 *or* 26 *or* 30)

(c) If : a and b $\in \mathbb{N}$ then a × b $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(d) The parallelogram has lines of symmetry.

(0 *or* 1 *or* 2 *or* 3)

2 ***Complete the following :***

(a) The sum of two numbers is 15 one of them is x , then the other = ...

(b) The type of the opposite transformation is a

(c) 1 , 4 , 8 , 13 , ... , ... (in the same pattern)

(d) The rhombus whose area is 36 cm^2. and the length of one of its diagonals is 8 cm. , the length of the other diagonal = ... cm.

3 (a) On 2-coordinate plane draw Δ ABC where : A (2 , 1) , B (5 , 1) and C (5 , 5) , then draw the image of the triangle ABC by reflection in $\overleftrightarrow{BC}$

(b) ***Solve each of the following equations :***

(1) $2x + 5 = 19$ (2) $\frac{1}{3}x + 8 = 10$

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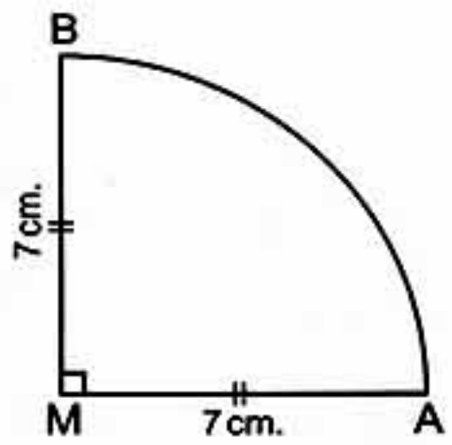


4 (a) ***Which is greater in area ?***

The triangle whose base length is 12 cm. and its corresponding height = 8 cm. or the parallelogram in which the length of the base = 10 cm. , and its corresponding height = 5 cm.

(b) ***Using the properties of operations in $\mathbb{N}$ to find the result of the following :*** **(1)** 572×99 **(2)** $113 + 419 + 87 + 181$

5 (a) ***Find the perimeter of the opposite figure where MA = MB = 7 cm.*** $\left(\pi = \frac{22}{7}\right)$



(b) ***Represent the following distribution by frequency polygon :***

Sets	5 –	7 –	9 –	11 –	13 –
Frequency	4	12	10	7	8



Answer the following questions :

1 ***Choose the correct answer :***

(a) The sum of two natural numbers $\mathbb{N}$ ($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(b) The area of a rhombus whose diagonals lengths are 6 cm. and 8 cm. is cm^2. (48 ***or*** 20 ***or*** 24 ***or*** 40)

(c) If the longest chord in a circle is 7 cm. then the circumference of the circle is cm. where $\left(\pi = \frac{22}{7}\right)$ (3.5 ***or*** 7 ***or*** 22 ***or*** 44)

(d) If $x + 7 = 19$, $x \in \mathbb{N}$, then x = ... (26 ***or*** 12 ***or*** 11 ***or*** 13)

2 ***Complete the following :***

(a) The least netural number is

(b) The additive netural element in $\mathbb{N}$ is , while the multiplicative natural element in $\mathbb{N}$ is

(c) Area of the triangle = $\frac{1}{2}$ the length of its base $\times$

(d) The number of axes of symmetry of the rhombus equals

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3 (a) Draw on the coordinates plane the triangle ABC where A (1 , 0) , B (2 , 2) and C (2 , 5) , then draw its image by reflection on $\overleftrightarrow{BC}$

(b) ***Use the commutative and associative properties in $\mathbb{N}$ to calculate :***
872 + 199 + 128 + 801

4 (a) Zahraa saved 14 pounds she bought 3 notebooks for x pound for each the remainder with her was 8 pounds express there situations by an equation.

(b) Find to the nearest hundredth the area of a parallelogram whose base length is 34.7 cm. and height 28.17 cm.

(c) The diagonal length of a square 6 cm. ***Find its area.***

5 (a) In the orthogonal cartesian coordinates locate the points A (2 , 2) , B (5 , 2) , C (5 , 8) , D (2 , 8) then ***complete :***

(1) The length of $\overline{AB}$ = ... units. **(2)** The length of $\overline{BC}$ = ... units.

(3) The figure ABCD is

(4) The perimeter of the figure ABCD = ... units.

(b) ***The following table shows the marks of 50 pupils in an exam of mathematics in one of months where the full mark is 50 marks. Draw the frequency histogram and the frequency polygon which represents these data :***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

27 Aswan

Aswan Educational Directorate
Experimental Language School

Answer the following questions :

1 ***Choose the correct answer :***

(a) $\frac{5}{7}$ $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) 10 × 0 = ... (100 *or* 10 *or* 0 *or* not possible)

(c) If : 2 x = 6 , then : x = ... (2 *or* 3 *or* 4 *or* 6)

(d) The circumference of the circle whose radius is 14 cm. equals cm. $\left(\pi = \frac{22}{7}\right)$ (14 *or* 22 *or* 44 *or* 88)

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2 ***Complete the following :***

(a) If : A (0 , 4) and B (4 , 4) , then the coordinates of the midpoint of $\overline{AB}$ is

(b) The multiplicative identity element in $\mathbb{N}$ is

(c) $(9 \times 4) \times 3 =$ $\times (3 \times 4)$

(d) The area of the triangle = $\frac{1}{2} \times$ $\times$

3 (a) ***Use the properties of addition to find the following :*** 82 + 75 + 18

(b) The lengths of the diagonals of a rhombus are 14 cm. and 10 cm. ***Calculate its area.***

4 (a) On a coordinate plane Draw the figure ABCD where A (1 , 1) , B (4 , 1) , C (4 , 3) , D (1 , 3) what is the name of the figure ABCD ?

(b) Find the height of the parallelogram with an area of 48 cm^2 and its base is 8 cm.

5 (a) ***Solve the equation :*** $2x + 3 = 9$

(b) ***Use the following table of data to draw a histogram :***

Number of hours	5 –	7 –	9 –	11 –
Frequency	4	12	9	5

28 South Sinai

South Sinai Educational Directorate
Tur Sinai Educational Administration

Answer the following questions :

1 ***Choose the correct answer :***

(a) 2 + 9 $\mathbb{N}$ ($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(b) Twice the number x subtracted 3 from it
($x - 3$ ***or*** $2x + 3$ ***or*** $2x - 3$ ***or*** $3 - 2x$)

(c) The square whose diagonal length is 8 cm. it's area = ... cm^2
(64 ***or*** 32 ***or*** 16 ***or*** 8)

(d) The perimeter of a square whose side length L = ...
(2L ***or*** 4L ***or*** 3L ***or*** 5L)

2 ***Complete the following :***

(a) The area of parallelogram = ...

(b) If : $x + 3 = 12$, then x = ...

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Final Examinations

(c) The next number in the pattern 5 , 35 , 65 , ...

(d) 99 added to the neutral element of multiplication = ...

3 (a) Calculate the area of triangle whose base length 10 cm. and the corresponding height of it is 9 cm.

(b) ***Put "< , = or >" :***

(1) $x + 18 \square x + 17$ **(2)** $2239 \square 2229$

4 (a) ***Put (✓) for the correct statement and (×) for the wrong one :***

(1) $(5 - 8) \in \mathbb{N}$ ()

(2) The additive neutral element in $\mathbb{N}$ is one. ()

(3) The value of x in the equation $3x = 24$ is 8 ()

(b) ***Find the circumference of a circle with diameter length 14 cm.*** $\left(\pi = \frac{22}{7}\right)$

5 ***The following table shows the marks of 40 pupils in mathematics exam.***

Sets	10 –	20 –	30 –	40 –	50 –	Total
Frequency	5	7	12	9	7	40

Draw frequency histogram and the frequency polygon which represent these data

29 Red Sea

Safaga Educational Administration
Safaga Experimental Language School

Answer the following questions :

1 ***Choose the correct answer :***

(a) 25 $\mathbb{N}$ ($\in$ *or* $\notin$ *or* $\subset$ *or* $\not\subset$)

(b) The additive identity element in $\mathbb{N}$ is (0 *or* 1 *or* 2)

(c) The circumference of a circle = ... (πr *or* $2\pi r$ *or* $3\pi r$)

(d) If $2x = 18$, then x = ... (6 *or* 8 *or* 9)

(e) $(12 \times 2) \div 2$ = ... (6 *or* 12 *or* 24)

2 ***Complete the following :***

(a) If $y - 7 = 5$, then y = ...

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(b) The circumference of a circle with diameter 7 cm. = ... cm.

(c) 1 , 3 , 6 , 10 , 15 , ... (in the same sequence)

(d) $(20 \times 50) \times 30 =$ $\times (50 \times 30)$

(e) A rhombus of diagonals length 12 cm. , and 10 cm. , its area = ... cm^2.

3 (a) ***Graph the following figure :*** A (1 , 2) , B (5 , 2) , C (3 , 7) and draw its line of symmetry.

(b) ***Complete :*** If $2x + 3 = 15$, then $x =$

4 (a) ***Find the area of triangle with base 8 cm. and height 5 cm. ?***

(b) ***Use the properties of multiplication to find :*** $4 \times 16 \times 25$

5 ***Represent the following data by histogram :***

Sets	0 –	4 –	8 –	12 –
Frequency	8	12	3	7

Answer the following questions :

1 ***Complete the following :***

(a) $2 \times (13 \times 5) = 2 \times (5 \times$ $)$

(b) The perimeter of a square whose side length is x = ...

(c) Area of the triangle = the length of its base x

(d) Dividing any natural number by is not possible.

2 ***Choose the correct answer :***

(a) Add 6 to the number x , the symbolic expression is

($6 - x$ ***or*** $6x$ ***or*** $x - 6$ ***or*** $x + 6$)

(b) (8 – 10) $\mathbb{N}$ ($\in$ ***or*** $\notin$ ***or*** $\subset$ ***or*** $\not\subset$)

(c) The area of a rhombus whose diagonals lengths are 6 cm. and 8 cm. is cm^2.

(48 ***or*** 12 ***or*** 24 ***or*** 40)

(d) The next number in the pattern 5 , 35 , 65 is

(70 ***or*** 75 ***or*** 95 ***or*** 105)

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Final Examinations

3 (a) ***Use the distributive property to get the product of the following :***

18×99

(b) ***Translate this verbal statement into an equation :***

A number if added to 17 the sum is 28

4 (a) ***Find the circumference of a circle with diameter length 14 cm.***

$\left(\pi = \frac{22}{7}\right)$

(b) ***Solve the equation :*** $x - 5 = 8$

5 ***The following table shows the marks of 50 pupils in an exam of mathematics in one of months where the full mark is 50 marks.***

Sets	10 –	20 –	30 –	40 –	Total
Frequency	10	12	18	10	50

Draw the frequency polygon which represents these data.

RaNia-SaYed

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Guide Answers

- Guide answers of the exercises.
- Guide answers of the worksheets.
- Guide answers of the final examinations.



RaNia SoYed

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Answers of the main book

Answers of unit one

Answers of exercise 1

1 15 , 0 , 417 , 91328

2

a ∈	b ⊂	c ⊂	d ∈
e ∉	f ⊂	g ⊂	h ⊄
i ⊂	j ∈	k ∉	l ⊂
m ⊂	n ⊂	o ⊂	p ⊄
q ⊂	r ∈		

3

a ×	b ×	c ✓	d ✓
e ×	f ✓	g ✓	h ✓
i ×	j ×	k ✓	l ✓
m ×	n ✓	o ✓	

4

a ℕ	b ∅	c E	d O
e O	f E	g P	h {2}
i ℕ	j ℕ	k ℕ	l ∅
m E	n {2}	o C	p ℕ
q {15 , 6 , 0 , 4}		r {1}	s {0 , 2}

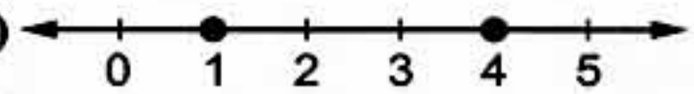
5

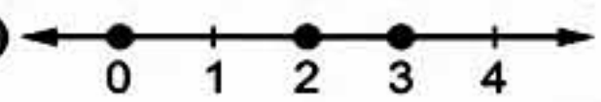
a ∈	b ∈	c ∉
d ∈	e ∈	f ∉

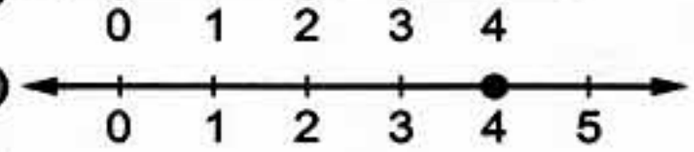
Answers of exercise 2

1 a {3 , 4 , 5} b {1 , 3 , 5 , 6}
c {0 , 2 , 4 , 6 , ...} d {5}

2

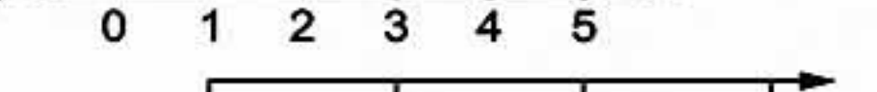
a


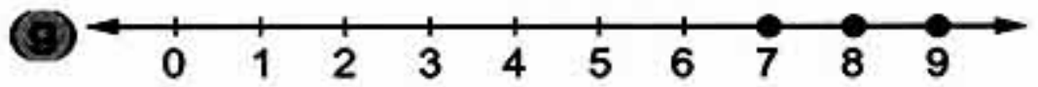
b


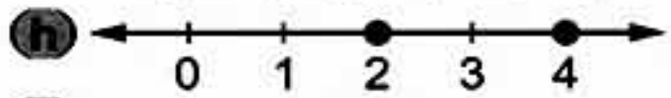
c


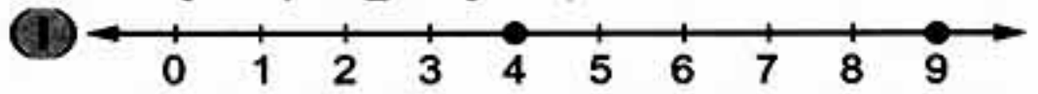
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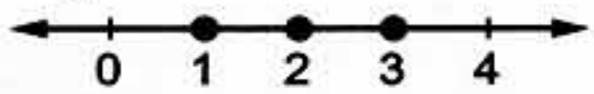
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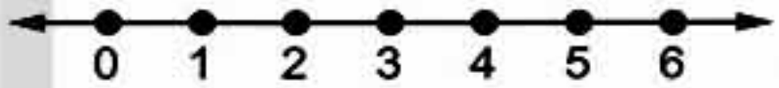
i


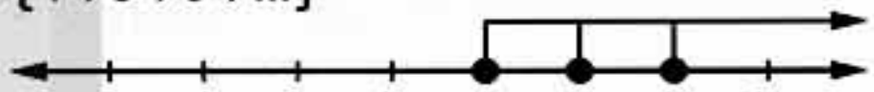
3


X ∩ Y = {5}

4

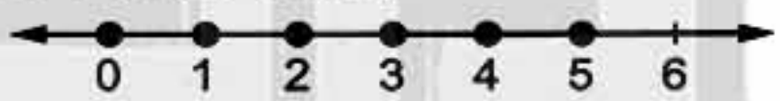
a {1 , 2 , 3}


b {0 , 1 , 2 , 3 , 4 , 5 , 6}


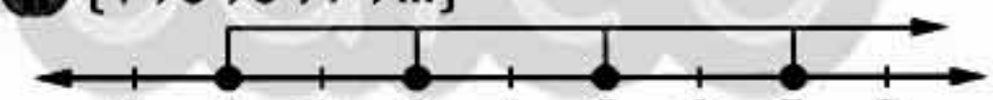
c {4 , 5 , 6 , ...}


d {2 , 3}

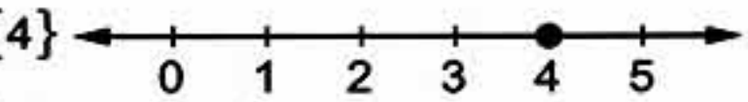

e {4 , 5 , 6}

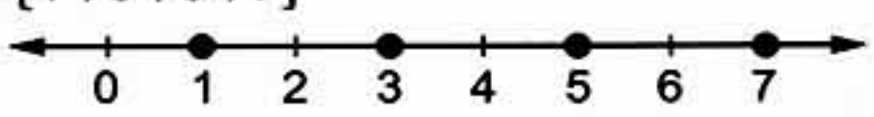

f {0 , 1 , 2 , 3 , 4 , 5}


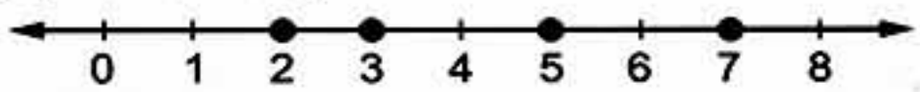
g {4 , 5 , 6 , 7 , ...}


h {1 , 3 , 5 , 7 , ...}


i {0 , 2 , 4 , 6 , ...}


j {4}


k {1 , 3 , 5 , 7}


l {2 , 3 , 5 , 7}


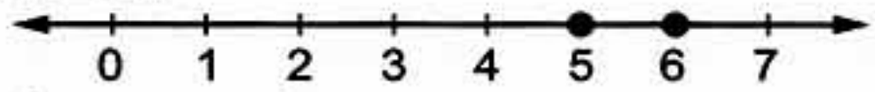
m {4 , 5 , 6 , 7}


هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى

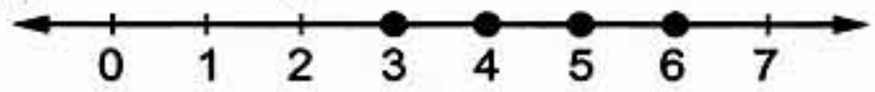


Answers of the main book

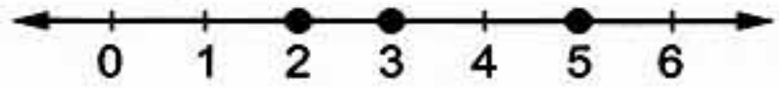
(n) {5 , 6}



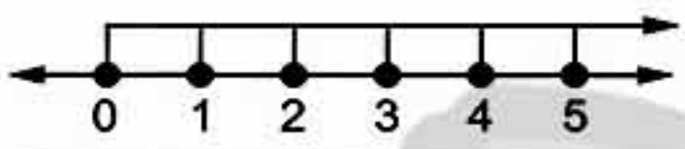
(o) {3 , 4 , 5 , 6}



(p) {2 , 3 , 5}

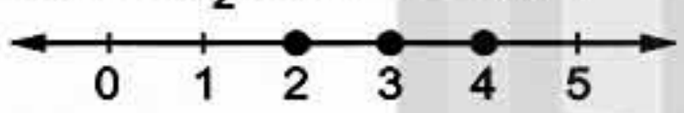


(q) {0 , 1 , 2 , 3 , 4 , ...}



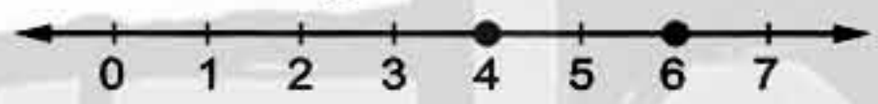
5 The values of x are : 4 , 6 and 8

The values of $\frac{x}{2}$ are : 2 , 3 and 4



6 The values of x are : 2 and 3

The values of $\frac{12}{x}$ are : 6 and 4



7 (a) ✓ (b) ✓ (c) ✗ (d) ✗
(e) ✗ (f) ✗ (g) ✗ (h) ✗

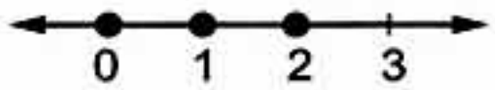
8 (a) zero (b) 1 (c) 0 (d) 1
(e) 2 (f) 5 (g) 9 (h) 8
(i) 9 (j) 4 (k) 99
(l) 6 , 7 , 8 , 9 (m) 92

9 (a) $X < 8$ (b) $X > 8$ (c) $8 < X$
(d) $8 > X$ (e) $Z \geq L$ (f) $9 \leq L$
(g) $9 \geq L$ (h) $9 < Z < 17$

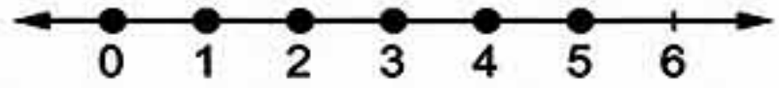
10 (a) $X = \{1 , 2 , 3\}$



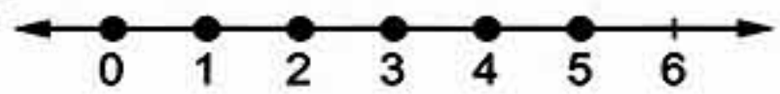
(b) $X = \{0 , 1 , 2\}$



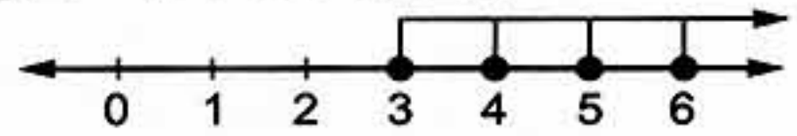
(c) $Z = \{0 , 1 , 2 , 3 , 4 , 5\}$



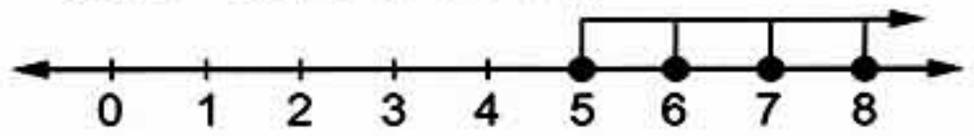
(d) $Y = \{0 , 1 , 2 , 3 , 4 , 5\}$



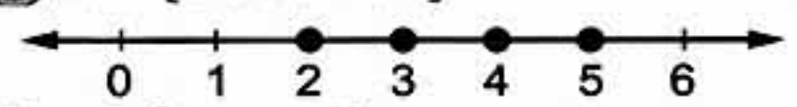
(e) $Y = \{3 , 4 , 5 , 6 , ...\}$



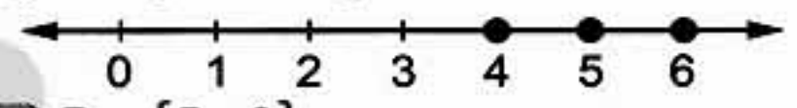
(f) $Z = \{5 , 6 , 7 , 8 , ...\}$



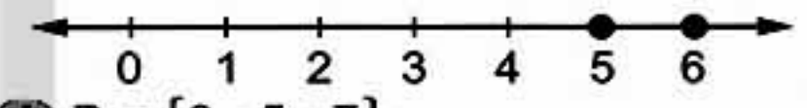
(g) $M = \{2 , 3 , 4 , 5\}$



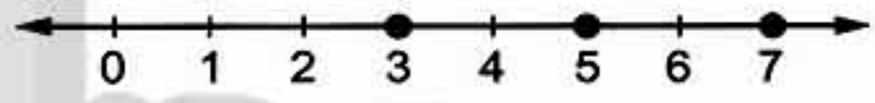
(h) $L = \{4 , 5 , 6\}$



(i) $B = \{5 , 6\}$



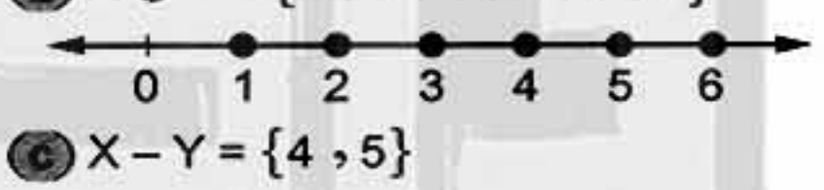
(j) $D = \{3 , 5 , 7\}$



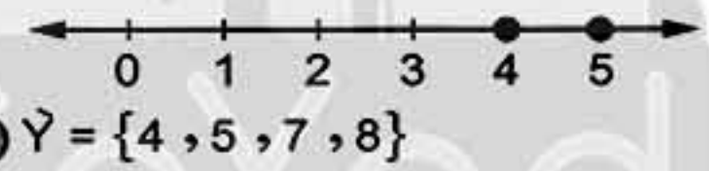
11 (a) $X \cap Y = \{2 , 3\}$



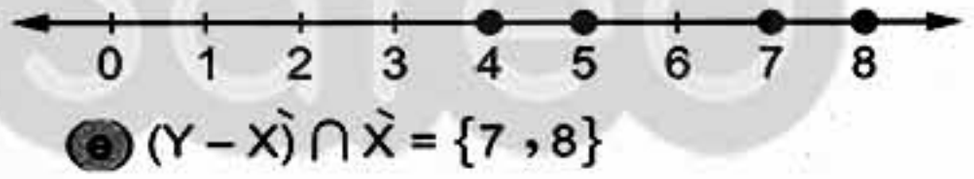
(b) $X \cup Y = \{2 , 3 , 4 , 5 , 1 , 6\}$



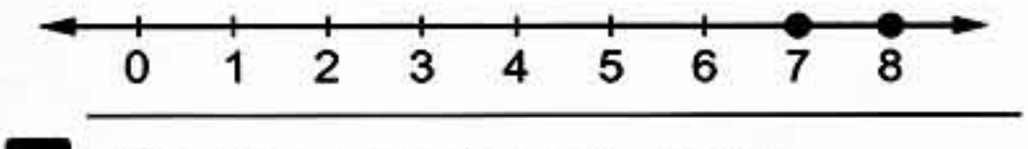
(c) $X - Y = \{4 , 5\}$



(d) $\grave{Y} = \{4 , 5 , 7 , 8\}$



(e) $(Y - \grave{X}) \cap \grave{X} = \{7 , 8\}$



12 The order is : 0 , 1 , 2 , 4 , and 5



13 The order is : 654 , 645 , 564 , 546 , 465 and 456

14 (a) < (b) > (c) > (d) >
(e) < (f) < (g) > (h) =

15 First :
(a) > (b) <
(c) < , because c is placed to the left of e

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Answers of the main book

(d) > , because e is placed to the right of b
(e) < , because a is placed to the left of d
(f) < , because c is placed to the left of d
Second : The ascending order is : b , c , a , e and d

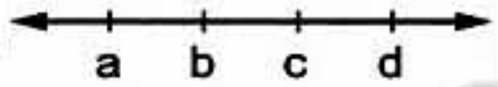
16 (a) > (b) < (c) >
(d) > (e) < (f) >

17 The numbers are : $x + 4$, $x + 5$ and $x + 6$

18 The numbers are : $y + 7$, $y + 9$, $y + 11$ and $y + 13$

19 The numbers are : $y - 2$ and $y + 2$
the least value of y is : 3

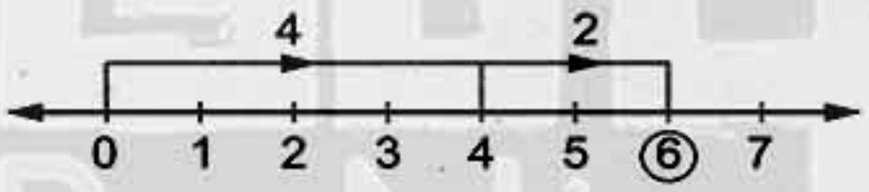
20



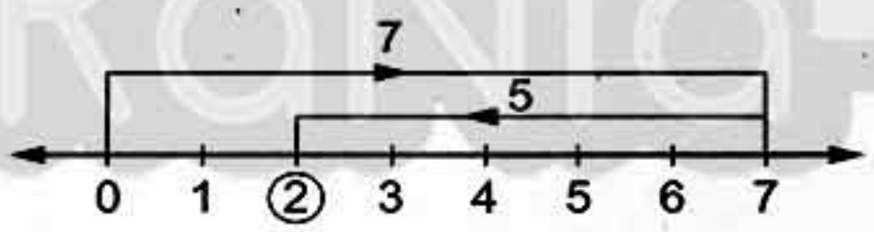
Answers of exercise 3

1

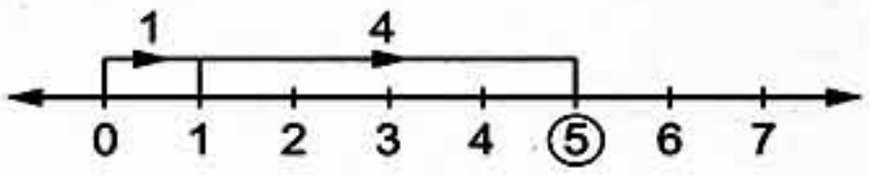
(a) $4 + 2 = 6$



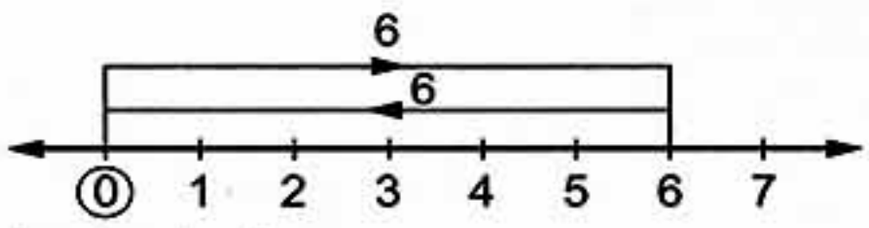
(b) $7 - 5 = 2$



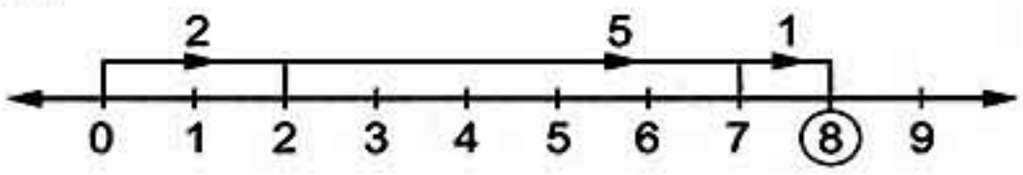
(c) $1 + 4 = 5$



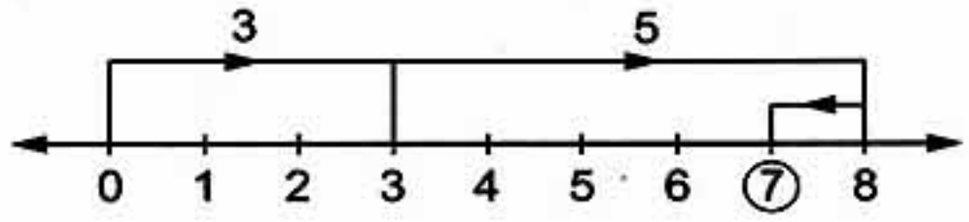
(d) $6 - 6 = 0$



(e) $2 + 5 + 1 = 8$



(f) $3 + 5 - 1 = 7$



2 (a) $213 + 57 = 57 + \mathbf{213}$ **(Commutative)**
(b) $149 + 673 = 673 + \mathbf{149}$ **(Commutative)**
(c) $17 + \mathbf{0} = \mathbf{0} + 17 = 17$
(Additive neutral element)
(d) $28 + (72 + 59) = (28 + \mathbf{72}) + 59$
(Associative)
(e) $(61 + 715) + 3547 = \mathbf{61} + (715 + 3547)$
(Associative)
(f) $a + \mathbf{b} = b + \mathbf{a}$ **(Commutative)**
(g) $(\mathbf{c} + a) + b = c + (\mathbf{a} + b)$ **(Associative)**

3 (a) $28 + 15 + 72$
$= 28 + 72 + 15$ (Commutative property)
$= (28 + 72) + 15$ (Associative property)
$= 100 + 15 = 115$

(b) $257 + 71 + 49$
$= 257 + (71 + 49)$ (Associative)
$= 257 + 120 = 377$

(c) $753 + 972 + 247$
$= 753 + 247 + 972$ (Commutative)
$= (753 + 247) + 972$ (Associative)
$= 1000 + 972 = 1972$

(d) $76 + 15 + 85 + 24 = 76 + 24 + 85 + 15$
(Commutative property)
$= (76 + 24) + (85 + 15)$ (Associative property)
$= 100 + 100 = 200$

(e) $672 + 665 + 335 + 328 = 672 + 328 + 335 + 665$
(Commutative property)
$= (672 + 328) + (335 + 665)$
(Associative property)
$= 1000 + 1000 = 2000$

(f) $973 + 299 + 227 + 901$
$= 973 + 227 + 299 + 901$ (Commutative)
$= (973 + 227) + (299 + 901)$ (Associative)
$= 1\,200 + 1\,200 = 2\,400$

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Answers of the main book

(g) 38 + 46 + 62 + 54 + 79 = 38 + 62 + 46 + 54 + 79
(Commutative property)
= (38 + 62) + (46 + 54) + 79
(Associative property)
= 100 + 100 + 79 = 279

(h) 53 + 62 + 75 + 47 + 25 + 38
= 53 + 47 + 62 + 38 + 75 + 25
(Commutative property)
= (53 + 47) + (62 + 38) + (75 + 25)
(Associative property)
= 100 + 100 + 100 = 300

4 (a) ∈ (b) ∈ (c) ∉ (d) ∈
(e) ∈ (f) ∈ (g) ∈ (h) ∉

5 (a) ≠ (b) = (c) ≠
(d) = (e) ≠

6 (a) = (b) > (c) =
(d) = (e) > (f) >

7 (a) ✗ (b) ✓ (c) ✓ (d) ✓
(e) ✗ (f) ✓ (g) ✗ (h) ✗

8 (a) even (b) even (c) odd (d) odd
(e) even (f) odd (g) even

9 (a) > (b) > (c) =
(d) > (f) > (g) <

10 (a) 4 310 (b) 642 (c) 594
(d) 4 310 (e) 997 (f) 1 236

Answers of exercise 4

1 (a) 2 × 347 × 5 = (2 × 5) × 347 = 10 × 347
= 3 470

(b) 4 × 128 × 25 = (4 × 25) × 128
= 100 × 128 = 12 800

(c) 8 × 49 × 125 = (8 × 125) × 49
= 1 000 × 49 = 49 000

(d) 20 × 16 × 5 = (20 × 5) × 16 = 100 × 16
= 1 600

(e) 2 × 8 × 75 × 125 = (8 × 125) × (75 × 2)
= 1000 × 150 = 150 000

(f) 2 × 25 × 75 × 4 = (2 × 75) × (25 × 4)
= 150 × 100 = 15000

(g) 4 × 5 × 25 × 6 = (4 × 25) × (5 × 6)
= 100 × 30 = 3 000

(h) 125 × 25 × 8 × 4 = (125 × 8) × (25 × 4)
= 1 000 × 100 = 100 000

2 (a) 35 × 64 + 35 × 36 = 35 × (64 + 36)
= 35 × 100 = 3 500

(b) 37 × 73 + 63 × 73 = (37 + 63) × 73
= 100 × 73 = 7 300

(c) 137 × 43 – 37 × 43 = 43 × (137 – 37)
= 43 × 100 = 4300

(d) 59 × 67 – 59 × 57 = 59 × (67 – 57)
= 59 × 10 = 590

(e) 16 × 999 + 16 × 1 = 16 × (999 + 1)
= 16 × 1 000 = 16000

(f) 37 × 101 – 37 × 1 = 37 × (101 – 1)
= 37 × 100 = 3 700

3 (a) 52 × 101 = 52 × (100 + 1)
= 52 × 100 + 52 × 1
= 5 200 + 52 = 5 252

(b) 915 × 1 001 = 915 × (1 000 + 1)
= 915 × 1 000 + 915 × 1
= 915 000 + 915 = 915 915

(c) 45 × 99 = 45 × (100 – 1)
= 45 × 100 – 45 × 1
= 4 500 – 45 = 4 455

(d) 572 × 99 = 572 × (100 – 1)
= 572 × 100 – 572 × 1
= 57 200 – 572 = 56 628

(e) 3 × 23 = 3 × (20 + 3) = 3 × 20 + 3 × 3
= 60 + 9 = 69

(f) 502 × 50 = (500 + 2) × 50
= 500 × 50 + 2 × 50
= 25 000 + 100 = 25 100

(g) 35 × 1 005 = 35 × (1 000 + 5)
= 35 × 1 000 + 35 × 5
= 35 000 + 175 = 35 175

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Answers of the main book

(h) $25 \times 427 = 25 \times (400 + 20 + 7)$
$= 25 \times 400 + 25 \times 20 + 25 \times 7$
$= 10\,000 + 500 + 175 = 10\,675$

(i) $15 \times 284 = 15 \times (200 + 80 + 4)$
$= 15 \times 200 + 15 \times 80 + 15 \times 4$
$= 3\,000 + 1\,200 + 60 = 4\,260$

4 (a) ∈ (b) ∈ (c) ∈ (d) ∉ (e) ∉
(f) ∈ (g) ∉ (h) ∈ (i) ∈ (j) ∈
(k) ∈ (l) ∉ (m) ∈ (n) ∈ (o) ∈
(p) ∉ (q) ∈ (r) ∉ (s) ∉ (t) ∈
(u) ∈ (v) ∉

5 (a) associative (b) 2 (c) 5
(d) 100 (e) 13 (f) 0
(g) is not defined (h) 7 (i) 5
(j) 2 (k) 0 (l) 0
(m) 2

6 (a) ✓ (b) ✓ (c) ✗ (d) ✓
(e) ✗ (f) ✗ (g) ✗ (h) ✗
(i) ✗ (j) ✗ (k) ✗ (l) ✗
(m) ✗ (n) ✗ (o) ✗ (p) ✓
(q) ✗ (r) ✓ (s) ✗ (t) ✗

7 (a) 0 , 1 (b) multiplicative identity
(c) 9 (d) 100 (e) 7 (f) 83
(g) 20 (h) 1 , 75 (i) 0 (j) 4 , 320
(k) 0 , 0 (l) 40 , 360 (m) 5 (n) 1 , 4
(o) 71 (p) 32 , 9 , 6 (q) 115
(r) 10 (s) 8 (t) 3 (u) 7
(v) 73 , 1 , 73 (w) even

8 (a) = (b) > (c) < (d) =
(e) > (f) < (g) < (h) =

9 (a) $2 \times a + 5 \times b = 2 \times 3 + 5 \times 4 = 6 + 20 = 26$
(b) $a \times c + b \times c = 3 \times 0 + 4 \times 0 = 0 + 0 = 0$
(c) $(3 \times a + 5 \times b) \times c = (3 \times 3 + 5 \times 4) \times 0$
$= (9 + 20) \times 0$
$= 29 \times 0 = 0$

(d) $(a + b - c) \times (a + b) = (3 + 4 - 0) \times (3 + 4)$
$= 7 \times 7 = 49$

(e) $(b - a) \times (b + a) = (4 - 3) \times (4 + 3)$
$= 1 \times 7 = 7$

10
$(16 + 24) \div 4 = 40 \div 4 = 10$
$(16 \div 4) + (24 \div 4) = 4 + 6 = 10$
We notice that :
$(16 + 24) \div 4 = (16 \div 4) + (24 \div 4)$

11 The order is : $178 - 178$, $(2 \times 3) \times 5$, $35 - 0$ and 7×10

12
(a) The closure property of ℕ under addition.
(b) The commutative property of addition.
(c) The associative property of addition.
(d) The additive neutral element in ℕ
(e) The closure property of ℕ under multiplication.
(f) The commutative property of multiplication.
(g) The associative property of multiplication.
(h) The multiplicative neutral element in ℕ
(i) The distribution of multiplication over addition property.

13 (a) 437 (b) 1 026 (c) 943
(d) 12 236 (e) 23
(f) $19 \times (54 + 23) = \mathbf{1\,026 + 437 = 1\,463}$
(g) $19 \times (23 \times 28) = \mathbf{437 \times 28 = 12\,236}$
(h) $23 \times 60 = 23 \times (\mathbf{41 + 19}) = \mathbf{943 + 437 = 1\,380}$

Answers of exercise 5

1 (a) 32 , 64 (b) 13 , 15 (c) 13 , 16
(d) 162 , 486 (e) 22 , 27 (f) 128 , 512
(g) 81 , 243 (h) 45 , 55 (i) 4 , 2
(j) 35 , 20 (k) 11 , 16 (l) 19 , 26
(m) 37 , 50 (n) 11 , 10
(o) 157 , 163 (p) 49
(q) 2.25 , 1.125 (r) 13 , 12
(s) 77 777 , 777 777

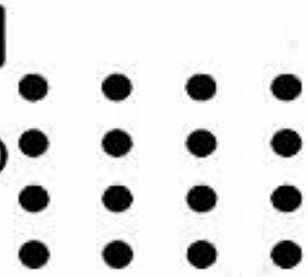
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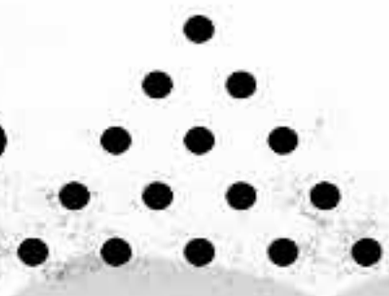


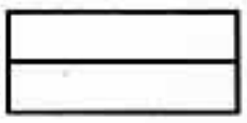
Answers of the main book

(t) 5×5 , 6×6 (u) 4×16 , 5×32
(v) (8 , 11) , (10 , 13) , (12 , 15)
(w) (D , W) , (E , V) , (F , U) (x) 48
(y) 2 , 5 , 8 , 11 , 14 , **17** , **20**
(z) 3 , 6 , 12 , 24 , 48 , 96 , 192

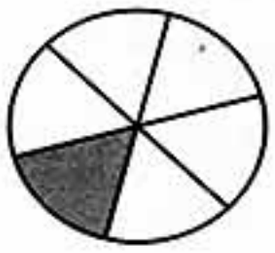
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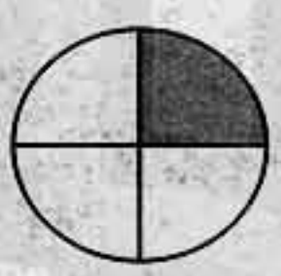
(a) 

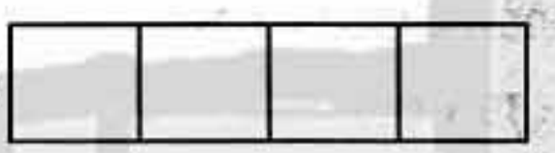
(b) 

(c) 

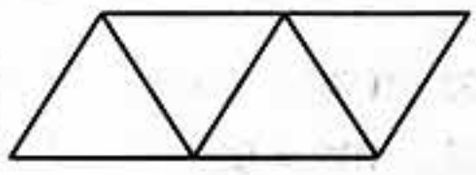
(d) 

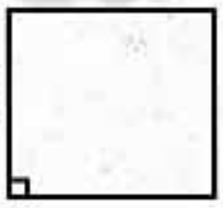
(e) 

(f) 

(g) 

(h) 

(i) 

(j) 

3

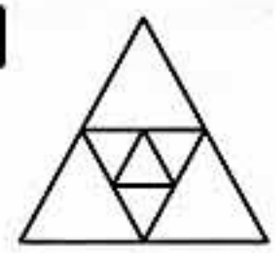
$\frac{2}{9} = 0.22222$ $\frac{3}{9} = 0.33333$ $\frac{4}{9} = 0.44444$
$\frac{5}{9} = 0.55555$ $\frac{6}{9} = 0.66666$ $\frac{7}{9} = 0.77777$
$\frac{8}{9} = 0.88888$

4 L.E. 22

5 96 rabbits

6 L.E. 144

7 (a) 271 , 266 , 260
(b) 498 , 510 , 504

8 

Answers of general exercise on unit One

First Completion questions

1	zero , 1	2	zero		
3	1	4	{0 , 1 , 2 , 3 , 4}		
5	{5 , 6 , 7 , 8}	6	{2 , 3 , 5 , 7 , 11 , 13}		
7	100	8	{1 , 2 , 3 , 4 , 5}		
9	odd	10	even		
11	6 , 8 , 7 > 6 , 7 < 8			12	7
13	9	14	4	15	8
16	47 , 100 + 48 = 148			17	5
18	63 , 36 , 100				
19	16 , 25 {There are other solutions}				
20	202 , 198 , 194				
21	35 , 45 , 55	22	19 , 26	23	13 , 21

Second Multiple choice questions

1	25	2	{3 , 4}	3	$\subset$
4	{2}	5	$\in$	6	<
7	even	8	25	9	$\notin$
10	125	11	$\in$	12	$\not\subset$

Third Essay questions

1 (a) $18 \times 99 = 81 \times (100 - 1)$
$= 18 \times 100 - 18 \times 1$
$= 1800 - 18 = 1782$
(b) $56 \times 1002 = 56 \times (1000 + 2)$
$= 56 \times 1000 + 56 \times 2$
$= 56000 + 112 = 56112$
(c) $517 \times 99 = 517 \times (100 - 1)$
$= 517 \times 100 - 517 \times 1$
$= 51700 - 517 = 51183$

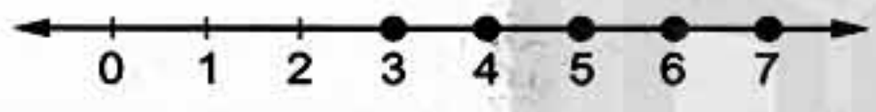
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Answers of the main book

(d) $316 \times 1001 = 316 \times (1000 + 1)$
$= 316 \times 1000 + 316 \times 1$
$= 316000 + 316 = 316\ 316$

2 (a) $X \cap Y = \{3 , 6\}$
(b) $X \cup Y = \{1 , 2 , 3 , 5 , 6\}$
(c) $X - Y = \{1 , 2\}$
(d) $\grave{X} = \{4 , 5 , 7\}$
(e) $\grave{Y} \cap (Y - \grave{X}) = \{1 , 2 , 4 , 7\}$

3 $X = \{3 , 4 , 5 , 6 , 7\}$



4 (a) $872 + 199 + 128 + 801$
$= 872 + 128 + 199 + 801$ (Commutative)
$= (872 + 128) + (199 + 801)$ (Associative)
$= 1000 + 1000 = 2000$

(b) $413 + 152 + 187 + 348$
$= 413 + 187 + 152 + 348$ (Commutative)
$= (413 + 187) + (152 + 348)$ (Associative)
$= 600 + 500 = 1100$

(c) $156 + 871 + 344 + 129$
$= 156 + 344 + 871 + 129$ (Commutative)
$= (156 + 344) + (871 + 129)$ (Associative)
$= 500 + 1000 = 1500$

(d) $642 + 173 + 358 + 27$
$= 642 + 358 + 173 + 27$ (Commutative)
$= (642 + 358) + (173 + 27)$ (Associative)
$= 1000 + 200 = 1200$

(e) $612 + 154 + 88 + 846$
$= 612 + 88 + 154 + 846$ (Commutative)
$= (612 + 88) + (154 + 846)$ (Associative)
$= 700 + 1000 = 1700$

(f) $192 + 488 + 308 + 12$
$= 192 + 308 + 488 + 12$ (Commutative)
$= (192 + 308) + (488 + 12)$ (Associative)
$= 500 + 500 = 1000$

5 (a) $98 \times 54 = (100 - 2) \times 54$
$= 100 \times 54 - 54 \times 2$
$= 5400 - 108 = 5292$

(b) $299 \times 17 = (300 - 1) \times 17$
$= 300 \times 17 - 1 \times 17$
$= 5100 - 17 = 5083$

(c) $304 \times 25 = (300 + 4) \times 25$
$= 300 \times 25 + 4 \times 25$
$= 7500 + 100 = 7600$

6 (a) $100 (312 + 75 + 188) = 100 (312 + 188 + 75)$
$= 100 (500 + 75)$
$= 100 \times 575 = 57\ 500$

(b) $84 (25 \times 4 + 125 \times 8) = 84 (100 + 1000)$
$= 84 \times 100 + 84 \times 1000$
$= 8400 + 84000 = 92400$

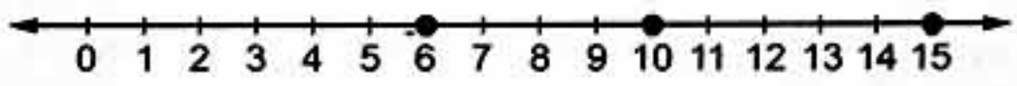
(c) $(64 + 135 + 36 + 65) \times 17$
$= (64 + 36 + 135 + 65) \times 17$
$= [(64 + 36) + (135 + 65)] \times 17$
$= (100 + 200) \times 17$
$= 300 \times 17 = 5100$

(d) $76 (5 \times 400 - 125 \times 8 \times 2)$
$= 76 (2000 - 2000)$
$= 76 \times 0 = 0$

(e) $83 (125 \times 8 - 45 \times 20)$
$= 83 (1000 - 900)$
$= 83 \times 100 = 8300$

(f) $20 (5 \times 8 - 16) = 20 (40 - 16)$
$= 20 \times 24 = 480$

7 The values of x are : 2 , 3 and 5
The values of $\frac{30}{x}$ are : 15 , 10 and 6



8 $(x + 8) , (x + 10) , (x + 12) , (x + 14) , (x + 16)$

9 $(x + 3) , (x + 5) , (x + 7) , (x + 9)$

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Answers of unit two

Answers of exercise 6

1 (a) $x + 6$ (b) $y - 3$ (c) $5z$ (d) $\frac{m}{3}$

2

	Symbol	Add 3	Subtract 7	Multiply by 3	Divide by 4
[a]	y	y + 3	y – 7	3 y	$\frac{y}{4}$
[b]	Z	Z + 3	Z – 7	3 Z	$\frac{Z}{4}$
[c]	L	L + 3	L – 7	3 L	$\frac{L}{4}$

3 (a) $2x + 3$ (b) $2y - 5$ (c) $3z + 7$
(d) $\frac{1}{2}x - 3$ (e) $\frac{1}{3}z + 6$

4 (a) $z + 36$ (b) $x - 5$ (c) $x + 9$
(d) $24 - t$ (e) $3y$ (f) $7.5p$
(g) $\frac{h}{q}$ (h) $\frac{9}{x}$ (i) $79v$
(j) $18 - K$ (k) $s + 7$ (l) $W - 5$
(m) $h - 15$ (n) $\frac{3}{5}n$ (o) $\frac{x}{5} + 5$

5 (a) $y - 8$ (b) $3x + 5$ (c) $\frac{1}{2}x + 4$
(d) $\frac{1}{3}y - 7$ (e) $2Z + 7$ (f) $3x - 3$
(g) $2(x + 3)$ (h) $3y - 1$

6 (a) $x - 5$ (b) $x + 10$ (c) $2x - 3$
(d) $3x - 2$ (e) $3x + 12$ (f) $2(x + 5)$
(g) $x + 5$ (h) × and +

7 (a) Subtracting 5 from a number n
(b) Quotient of a number f by 3
(c) Adding 15 to a number c
(d) Subtracting a number y from 9
(e) Product of a number x and 8

8 (a) $3(y + 4)$ (b) $5(x - 6)$

9 $\frac{m}{12}$

Answers of exercise 7

1 (a) $y = 9x$ (b) $y = x + 5$ (c) $x = \frac{y}{3}$
(d) $x = y - 7$ (e) $x = 2y + 9$
(f) $y = 2(x + 8)$

2 (a) $20 - x$ (b) $\frac{10}{x}$ (c) $15 - x$
(d) $y + 7$ (e) $y + 3$ [f] $25 - x$

3 (a) $30 - x$ (b) $10 - x$ (c) 3ℓ
(d) 4ℓ (e) $4x$ (f) $10 - x$
(g) $5x$ (h) $2(x + y)$ (i) $\ell - 3$

4 $y = 6x$

5 He should pay = $28x + 5$

6 $y = 25x + 3$
The total price Bassem has to pay
$= 25 \times 3 + 3 = L.E.\ 78$

7 (a) 12 , $12 + 5x$
(b)

Number of overtime hours (x)	0	1	2	3	4	5
Total daily wage (y)	12	17	22	27	32	37

8

x	3	1	5	6	4	7
y	12	4	20	24	16	28

9 $P = 2(6 + w)$
at w = 4 cm.
then , $P = 2(6 + 4) = 20$ cm.

10 $P = 2\ell + 5$

11 $P = 2(3x + y)$
at x = 2 and y = 3
then , $p = 2(3 \times 2 + 3) = 18$ cm.

12 $C = 5x + 3y$

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Answers of the main book

Answers of exercise 8

1 (a) Equation : $x + 5 = 13$, solution : $x = 8$

(b) Equation : $2x = 20$, solution : $x = 10$

(c) Equation : $5x = 15$, solution : $x = 3$

2

(a)	$x + 3 = 12$	$x = 12 - 3$	$x = 9$
(b)	$x + 8 = 15$	$x = 15 - 8$	$x = 7$
(c)	$x - 7 = 25$	$x = 25 + 7$	$x = 32$
(d)	$y - 5 = 7$	$y = 7 + 5$	$y = 12$
(e)	$8 + z = 8$	$z = 8 - 8$	$z = 0$
(f)	$9 + y = 44$	$y = 44 - 9$	$y = 35$
(g)	$3x = 27$	$x = \frac{27}{3}$	$x = 9$
(h)	$4x = 16$	$x = \frac{16}{4}$	$x = 4$
(i)	$37y = 37$	$y = \frac{37}{37}$	$y = 1$
(j)	$5a = 0$	$a = \frac{0}{5}$	$a = 0$
(k)	$\frac{1}{6}x = 12$	$x = 12 \times 6$	$x = 72$
(l)	$\frac{1}{5}y = 1$	$y = 1 \times 5$	$y = 5$
(m)	$70 = 50 + t$	$t = 70 - 50$	$t = 20$
(n)	$16 = n - 3$	$n = 16 + 3$	$n = 19$
(o)	$48 = 4y$	$y = \frac{48}{4}$	$y = 12$

3

(a)	$2x + 9 = 21$	$2x = 21 - 9$	$2x = 12$
	$x = \frac{12}{2}$	$x = 6$	
(b)	$3y - 5 = 7$	$3y = 7 + 5$	$3y = 12$
	$y = \frac{12}{3}$	$y = 4$	
(c)	$3x + 8 = 29$	$3x = 29 - 8$	$3x = 21$
	$x = \frac{21}{3}$	$x = 7$	
(d)	$2y - 12 = 2$	$2y = 2 + 12$	$2y = 14$
	$y = \frac{14}{2}$	$y = 7$	
(e)	$\frac{1}{3}x + 8 = 10$	$\frac{1}{3}x = 10 - 8$	$\frac{1}{3}x = 2$
	$x = 2 \times 3$	$x = 6$	
(f)	$\frac{1}{6}x - 3 = 2$	$\frac{1}{6}x = 2 + 3$	$\frac{1}{6}x = 5$
	$x = 5 \times 6$	$x = 30$	

4 (a) $20 - 4 = 16$, then $x = 4$

(b) $15 - 5 = 10$, then $y = 5$

5 (a) 14 (b) 9 (c) 36 (d) 200

(e) 36 (f) 4 (g) 8

6 (a) 6 (b) 13 (c) 7 (d) 56

(e) 5 (f) 6 (g) 5 (h) 2

(i) 15 (j) 4

7 (a) $x + 6 = 9$ (b) $y + 17 = 28$

(c) $z - 9 = 23$ (d) $3x = 12$

(e) $3x - 5 = 16$ (f) $2x + 8 = 10$

(g) $3x + 9 = 15$

8 Let the number be x

then , $x + 3 = 9$ $x = 9 - 3$ $x = 6$

the number is 6

9 $6x = 42$ $x = \frac{42}{6}$ $x = 7$

The number is 7

10 $x + 10 = 16$ $x = 16 - 10$ $x = 6$

The price of the notebook is L.E. 6

11 (a) The sum of a number x and 7 is 29

(b) The difference between a number x and 5 is 19

(c) The difference between 40 and a number y is 32

12 (a) 9 (b) 18 (c) 117

(d) 32 (e) 3 (f) 7

13 (a) 61 (b) 9 (c) 8

(d) 6 (e) 3 (f) 100

(g) 4 (h) 2 (i) 1

14 (a) × (b) + (c) − (d) +

(e) + (f) + (g) + (h) −

15 $\diamond = 45$, $\Delta = 30$

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Answers of general exercise on unit Two

First Completion questions

1 $2x + 3$
2 $3y + 5$
3 $2z - 8$
4 $\frac{x}{3} + 3$
5 $5L - 6$
6 7
7 14
8 4
9 6
10 $x + 5$
11 $2x + 3$
12 $x - 4$
13 $8 - x$
14 $35 - x$
15 $\frac{42}{x}$
16 19
17 30
18 34

Second Multiple-choice questions

1 $y + 5$
2 7
3 8
4 $20 - x$
5 $7x - 3$
6 $15 - x$
7 $15 - x$
8 $4x$
9 3 L
10 $2x - 7$

Third Essay questions

1 $3x + 8 = 29$ $3x = 29 - 8$ $3x = 21$
$x = \frac{21}{3}$ $x = 7$

2 $5x - 7 = 33$ $5x = 33 + 7$ $5x = 40$
$x = \frac{40}{5}$ $x = 8$

3 $\frac{1}{3}x + 8 = 10$ $\frac{1}{3}x = 10 - 8$ $\frac{1}{3}x = 2$
$x = 2 \times 3$ $x = 6$

4 $\frac{1}{7}x - 3 = 2$ $\frac{1}{7}x = 2 + 3$ $\frac{1}{7}x = 5$
$x = 5 \times 7$ $x = 35$

RaNia SaYed

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Answers of unit Three

Answers of exercise 1

1 (a) The area = $\frac{1}{2} \times 10 \times 6 = 30\ cm^2$.

(b) The area = $\frac{1}{2} \times 6 \times 4 = 12\ cm^2$.

(c) The area = $\frac{1}{2} \times 5 \times 7 = 17.5\ cm^2$.

(d) The area = $\frac{1}{2} \times 4.2 \times 3.8 = 7.98\ cm^2$.

(e) The area = $\frac{1}{2} \times 3 \times 2 = 3\ cm^2$.

(f) The area = $\frac{1}{2} \times 4.4 \times 3.2 = 7.04\ cm^2$.

(g) The area = $\frac{1}{2} \times 6 \times 2.7 = 8.1\ cm^2$.

(h) The area = $\frac{1}{2} \times 3 \times 1.7 = 2.55\ cm^2$.

(i) The area = $\frac{1}{2} \times 6 \times 8 = 24\ cm^2$.

2 The area = $\frac{1}{2} \times 4.2 \times 5.5 = 11.55\ m^2$.

3 The height = $\frac{60}{\frac{1}{2} \times 7.5} = 16$ cm.

4 The base length = $\frac{180}{\frac{1}{2} \times 45} = 8$ cm.

5

Base length of Δ in (cm)	Height of Δ in (cm)	Area of Δ in (cm^2)
12	9	54
10	5	25
6	8.2	24.6

6 (a) b × h (b) 12 (c) 10 (d) 20
(e) 40 (f) 5 (g) 35.1

7 The height = 12 – 4 = 8 cm.

The area = $\frac{1}{2} \times 12 \times 8 = 48\ cm^2$.

8 The height = $\frac{3}{7} \times 14 = 6$ cm.

The area = $\frac{1}{2} \times 14 \times 6 = 42\ cm^2$.

9 The area of the square = $7 \times 7 = 49\ cm^2$.

The area of the triangle = $49\ cm^2$.

$h = \frac{A}{\frac{1}{2} \times b} = \frac{49}{\frac{1}{2} \times 14} = 7$ cm.

10 The area of land = $\frac{1}{2} \times 10 \times 3 = 15\ m^2$.

The area of garden = $5 \times 5 = 25\ m^2$.

The area of garden is larger.

11 The area of garden = $\frac{1}{2} \times 8 \times 7 = 28\ m^2$.

The area of land = $8 \times 3 = 24\ m^2$.

The area of garden is larger.

12 The area of the triangle = $\frac{1}{2} \times 32.5 \times 40$

$= 650\ cm^2$.

The area of the rectangle = $26 \times 20 = 520\ cm^2$.

The area of the triangle is greater

The difference = 650 – 520 = $130\ cm^2$.

13 (a) The area = $\frac{1}{2} \times 34 \times 15 = 255\ cm^2$.

(b) The area = $\frac{1}{2} \times 4.8 \times 2 = 4.8\ cm^2$.

14 (a) The area = $\left(\frac{1}{2} \times 2 \times 2\right) + (2 \times 3)$

$= 2 + 6 = 8\ cm^2$.

(b) The area = $\left(\frac{1}{2} \times 4 \times 4\right) + (4 \times 4)$

$= 8 + 16 = 24\ cm^2$.

(c) The area = $\left(\frac{1}{2} \times 3 \times 4\right) + (5 \times 1.5)$

$= 6 + 7.5 = 13.5\ cm^2$.

(d) The area = $\left(\frac{1}{2} \times 3 \times 6\right) + (3 \times 6)$

$= 9 + 18 = 27\ cm^2$.

(e) The area = $\left(\frac{1}{2} \times 48 \times 10\right) + \left(\frac{1}{2} \times 48 \times 24\right)$

$= 240 + 576 = 816\ m^2$.

(f) The area = $\left(\frac{1}{2} \times 3 \times 4\right) + \left(\frac{1}{2} \times 4 \times 6\right)$

$= 6 + 12 = 18\ cm^2$.

(g) The area = $\left(\frac{1}{2} \times 5 \times 6\right) + \left(\frac{1}{2} \times 6 \times 6\right)$

$= 15 + 18 = 33\ cm^2$.

(h) The area = $\left(\frac{1}{2} \times 8 \times 4\right) + \left(\frac{1}{2} \times 8 \times 4\right)$

$= 16 + 16 = 32\ cm^2$.

(i) The area = $\left(\frac{1}{2} \times 3.5 \times 3.5\right) + \left(\frac{1}{2} \times 3.5 \times 3.5\right)$

$+ (3.5 \times 5) + (5 \times 12)$

$= 6.125 + 6.125 + 17.5 + 60$

$= 89.75\ cm^2$.

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15 (a) The area $= \frac{1}{2} \times 4 \times 3 = 6\ cm^2$.

(b) The area $= \frac{1}{2} \times 4.5 \times 3.2 = 7.2\ cm^2$.

(c) The area of the triangle AEB
$= \frac{1}{2} \times 3 \times 3 = 4.5\ cm^2$.
The area of the triangle AEC
$= \frac{1}{2} \times 3 \times 2 = 3\ cm^2$.
The area of the shaded part
$= 4.5 + 3 = 7.5\ cm^2$.

(d) The area of the rectangle ABCD
$= 6 \times 4 = 24\ cm^2$.
The area of the triangle ABE
$= \frac{1}{2} \times 4 \times 4 = 8\ cm^2$.
The area of the shaded part
$= 24 - 8 = 16\ cm^2$.

(e) The area of the shaded part
$= (5 \times 8) - \left[\left(\frac{1}{2} \times 3 \times 3\right) + \left(\frac{1}{2} \times 3 \times 8\right)\right]$
$= 40 - (4.5 + 12) = 40 - 16.5 = 23.5\ cm^2$.

(f) The area of the rectangle
$= 3 \times 6 = 18\ cm^2$.
The area of the unshaded triangle
$= \frac{1}{2} \times 3 \times 6 = 9\ cm^2$.
The area of the shaded part
$= 18 - 9 = 9\ cm^2$.

16 (a) 41 (b) 12 (c) 144 (d) 27 (e) 42

17 The area of the triangle ABC
$= \frac{1}{2} \times 4 \times 3 = 6\ cm^2$.
The area of the triangle BCE
$= \frac{1}{2} \times 4 \times 1.5 = 3\ cm^2$.
The area of the coloured part
$= 6 - 3 = 3\ cm^2$.

18 The length of the rectangle ABCD
$= 32 + 4 = 8$ cm.
The length of $\overline{EB} = 8 - 5 = 3$ cm.
The area of the triangle ABE
$= \frac{1}{2} \times 4 \times 3 = 6\ cm^2$.
The area of AECD $= 32 - 6 = 26\ cm^2$.

19 The area of the triangle ABC $= \frac{1}{2} \times 6 \times 8$
$= 24\ cm^2$.
The length of $\overline{AD} = \frac{24}{\frac{1}{2} \times 10} = 4.8$ cm.

20 The area of the triangle ABC
$= \frac{1}{2} \times 12 \times 16 = 96\ cm^2$.
The length of $\overline{BC} = \frac{96}{\frac{1}{2} \times 9.6} = 20$ cm.

21 (a) The area of the triangle ABC
$= \frac{1}{2} \times 21 \times 12 = 126\ cm^2$.

(b) The length of $\overline{AD} = \frac{126}{\frac{1}{2} \times 20} = 12.6$ cm.

22 The area of Δ ABC $= \frac{1}{2} \times BC \times AD$
$= \frac{1}{2} \times 7 \times 8 = 28\ cm^2$.
The length of $\overline{BE} = \frac{28}{\frac{1}{2} \times 10} = 5.6$ cm.

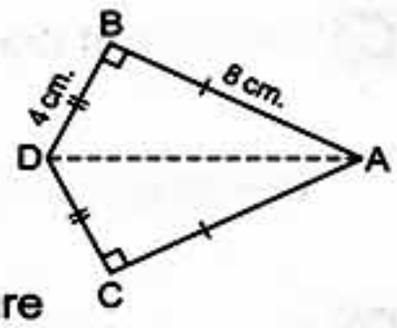
23 The length of $\overline{CE} = 35 - 23 = 12$ cm.
The length of $\overline{CD} = \frac{828}{23} = 36$ cm.
The area of Δ DCE $= \frac{1}{2} \times 12 \times 36 = 216\ cm^2$.

24 Half the perimeter of rectangle ABCD
$= 26 + 2 = 13$ cm.
BC $= 13 - 4 = 9$ cm.
The length of $\overline{BE} = 9 - 4 = 5$ cm.
The area of Δ ABE $= \frac{1}{2} \times 4 \times 5 = 10\ cm^2$.
The area of the rectangle ABCD $= 4 \times 9 = 36\ cm^2$.
The area of the figure AECD $= 36 - 10 = 26\ cm^2$.

25 The area of the triangle XAY
$= \frac{1}{2} \times 4 \times 4 = 8\ cm^2$.
The area of the triangle XBC
$= \frac{1}{2} \times 8 \times 4 = 16\ cm^2$.
The area of the triangle YDC
$= \frac{1}{2} \times 4 \times 8 = 16\ cm^2$.
The area of the square ABCD
$= 8 \times 8 = 64\ cm^2$.
The area of the triangle XCY
$= 64 - (8 + 16 + 16) = 24\ cm^2$.

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26 The area of Δ ABD
$= \frac{1}{2} \times 4 \times 8 = 16$ cm^2.
The area of Δ ACD
$= \frac{1}{2} \times 4 \times 8 = 16$ cm^2.
The area of the whole figure
$= 16 + 16 = 32$ cm^2.



Answers of exercise 2

1 (a) The area $= 40 \times 60 = 2\,400$ cm^2.
(b) The area $= 10 \times 10 = 100$ cm^2.
(c) The area $= 5.5 \times 7 = 38.5$ cm^2.
(d) The area $= 28.4 \times 58 = 1647.2$ cm^2.

2 (a) The area $= 3 \times 10 = 30$ m^2.
(b) The area $= 4 \times 2 = 8$ m^2.
(c) The area $= 4 \times 2 = 8$ m^2.
(d) The area $= 30 \times 60 = 1\,800$ cm^2.
(e) The area $= 6 \times 12 = 72$ cm^2.
(f) The area $= 2.7 \times 4.1 = 11.07$ cm^2.
(g) The area $= 17.5 \times 9.1 = 159.25$ cm^2.
(h) The area $= 12 \times 6 = 72$ cm^2.

3 The area $= 14 \times 9 = 126$ m^2.

4 The area $= 15.2 \times 34.6 = 525.92$ cm^2.

5 The area $= 34.7 \times 28.17 \simeq 977.50$ cm^2.

6 The base length = the area ÷ the height
$= 36 \div 9 = 4$ cm.

7 The height = the area ÷ the length of the base
$= 90 \div 9 = 10$ mm.

8

Length of the base in cm.	Corresponding height in cm.	The area in cm^2
8	3.25	**26**
6.1	**9**	54.9
15	4.2	63

9 The area of the parallelogram $= 15.7 \times 9.4$
$= 147.58$ cm^2.
The area of the triangle $= \frac{1}{2} \times 14 \times 18$
$= 126$ cm^2.
The area of the parallelogram is greater

10 The area of the parallelogram = the length of the smaller base × the greater height
$= 6 \times 4 = 24$ m^2.

11
- Area of figure 1 = **3 × 3**
 = **9** square units
- Area of figure 2 = **3 × 4**
 = **12** square units
- Area of figure 3 = **3 × 5**
 = 15 square units
- Area of figure 4 = **9 + 9**
 = **18** square units

12 19.2 , AB

13 The area $= 3.5 \times 4 = 14$ m^2.
The length of $\overline{BC} = \frac{14}{2.8} = 5$ m.

14 The area of the parallelogram $= 6 \times 10$
$= 60$ cm^2.
The area of the rectangle $= 6 \times 10 = 60$ cm^2.
The area of the parallelogram
= the area of the rectangle

15 AD = 12 cm. , AM = 6 cm.
The area of the parallelogram ABCD = 84
The area of the triangle ABM = 21
The area of the figure MBCD = 63

16 The base length = 9 cm.

17 (a) The area of the square
$= 6 \times 6 = 36$ square units
The area of the parallelogram
$= 2 \times 4 = 8$ square units
The area of the shaded part = 36 – 8
= 28 square units
(b) The area of whole figure
$= (6 \times 2) + (5 \times 3) = 12 + 15$
= 27 square units
The area of the unshaded part $= 1 \times 1$
= 1 square unit
The area of the shaded part = 27 – 1
= 26 square units

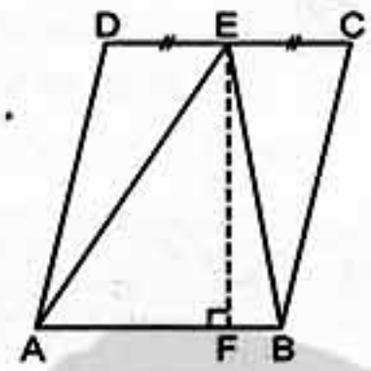
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(c) The area of the shaded part
$= (5 \times 5) - (2 \times 3) = 25 - 6$
$= 19$ square units

18 The area will be double.

19 The area of
the triangle AEB
$= \frac{1}{2}$ (AB × EF)
But the area of
the parallelogram
$= AB \times EF = 375\ cm^2$.
, then the area of the triangle AEB
$= \frac{1}{2} \times 375 = 187.5\ cm^2$.



20 The area of eighth parallelogram
$= 2 \times 256 = 512\ cm^2$.

Answers of exercise 3

1 (a) itself
(b) The length of its diagonal × itself
(c) 16 (d) 50

2 (a) The area $= 4.4 \times 4.4 = 19.36\ cm^2$.
(b) The area $= \frac{1}{2} \times 8 \times 8 = 32\ cm^2$.
(c) The area $= \frac{1}{2} \times 16 \times 16 = 128\ cm^2$.
(d) The area $= 8 \times 8 = 64\ cm^2$.
(e) The area $= \frac{1}{2} \times 10 \times 10 = 50\ cm^2$.
(f) The area $= \frac{1}{2} \times 16.2 \times 16.2 = 131.22\ cm^2$.

3 The area $= 7 \times 7 = 49\ cm^2$.

4 The area $= \frac{1}{2} \times 6 \times 6 = 18\ cm^2$.

5 The area $= \frac{1}{2} \times 5.4 \times 5.4 = 14.58\ cm^2$.

6 The area $= 1.6 \times 1.6 = 2.56\ m^2$.

7 The area of the square $= 64\ cm^2 = (8 \times 8)\ cm^2$.
The side length = 8 cm.
The perimeter $= 8 \times 4 = 32$ cm.

8 $A = \frac{1}{2} \times d \times d$
$24.5 = \frac{1}{2} \times d \times d$
$49 = d \times d$
$7 \times 7 = d \times d$
$d = 7$
The length of the diagonal = 7 cm.

9 The side length of the square
= its perimeter ÷ 4 = 12 ÷ 4 = 3 cm.
The area = side length x itself $= 3 \times 3 = 9\ cm^2$.

10 The area of the first square $= 9 \times 9 = 81\ cm^2$.
The area of the second square $= \frac{1}{2} \times 12 \times 12$
$= 72\ cm^2$.
The area of the first square is greater

11 The area of the square $= \frac{1}{2} \times 10 \times 10 = 50\ cm^2$.
The area of the triangle $= \frac{1}{2} \times 8 \times 15 = 60\ cm^2$.
The area of the triangle is greater.

12 The area of the rectangle = length × width
$= 9 \times 2 = 18\ cm^2$.
The area of the square = $18\ cm^2$.
The area of the square $= \frac{1}{2} \times d \times d$
$18 = \frac{1}{2} \times d \times d$
$36 = d \times d$
$6 \times 6 = d \times d$
The length of its diagonal = 6 cm.

13 The area of the rectangle $= 9 \times 4 = 36\ m^2$.
The area of the square $= 36\ m^2 = (6 \times 6)\ m^2$.
The side length of the square = 6 m.
The perimeter of the square $= 6 \times 4 = 24$ m.

14 (a) The area $= 6 \times 6 = 36$ area unit.
(b) The area $= \frac{1}{2} \times 6 \times 6 = 18$ area unit.
(c) The area $= (3 \times 3) + (3 \times 6)$
$= 9 + 18 = 27$ area unit.
(d) The area $= (4 \times 4) + [2 \times (4 \times 2)]$
$= 16 + 16 = 32$ area unit.

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15 The area of land = $\frac{1}{2} \times 28 \times 28 = 392\ m^2$.
The area of the house = $15 \times 15 = 225\ m^2$.
The area of the graden = $392 - 225 = 167\ m^2$.

16 The area of land = $18 \times 10 = 180\ m^2$.
The area of basin of flowers = $\frac{1}{2} \times 7 \times 7$
$= 24.5\ m^2$.
The area of the surface left = $180 - 24.5$
$= 155.5\ m^2$.

17 The area of land = $\frac{1}{2} \times 24 \times 24 = 288\ m^2$
The area of house = $12 \times 12 = 144\ m^2$
The area of garden = $288 - 144 = 144\ m^2$

18 The area of each square = $\frac{1}{2} \times 9 \times 9$
$= 40.5\ cm^2$.
The area of all square = 7×40.5
$= 283.5\ cm^2$.
The area of left part = $312.5 - 283.5$
$= 29\ cm^2$.

19 The side length of the square ABCD = 6 cm.
The length of $\overline{AE} = \frac{6}{2} = 3$ cm.
The area of the triangle AEC = $\frac{1}{2} \times 3 \times 6 = 9\ cm^2$.

20 The area of the square ABCD
$= 20 \times 20 = 400\ cm^2$.
The area of the triangle ADC
$= \frac{1}{2} \times 20 \times 20 = 200\ cm^2$.
The area of the triangle XBY
$= \frac{1}{2} \times 10 \times 10 = 50\ cm^2$.
The area of the shaded part
$= 400 - (200 + 50)$
$= 400 - 250 = 150\ cm^2$.

21 (a) The area of the parallelogram = $6 \times 4 = 24\ cm^2$.
The area of the square = $3 \times 3 = 9\ cm^2$.
The area of the shaded part = $24 - 9 = 15\ cm^2$.
(b) The area of rectangle = $10 \times 5.2 = 52\ cm^2$.
The area of the square = $\frac{1}{2} \times 4 \times 4 = 8\ cm^2$.
The area of the shaded part = $52 - 8 = 44\ cm^2$.

(c) The area of the square = $6 \times 6 = 36\ cm^2$.
The area of the triangle = $\frac{1}{2} \times 2 \times 2$
$= 2\ cm^2$.
The area of the shaded part
$= 36 - (4 \times 2) = 36 - 8 = 28\ cm^2$.

22 The side length of the square = 8 cm.
The area of the triangle XAY
$= \frac{1}{2} \times 4 \times 4 = 8\ cm^2$.
The area of the triangle XBC
$= \frac{1}{2} \times 4 \times 8 = 16\ cm^2$.
The area of the triangle CDY
$= \frac{1}{2} \times 4 \times 8 = 16\ cm^2$.
The area of the triangle XYC
$= 64 - (8 + 16 + 16) = 64 - 40 = 24\ cm^2$.

Answers of exercise 4

1 (a) the height
(b) the lengths of its two diagonals.
(c) 100 (d) 48

2 (a) The area = $9 \times 8 = 72\ cm^2$.
(b) The area = $8 \times 4 = 32\ cm^2$.
(c) The area = $7 \times 5 = 35\ cm^2$.
(d) The area = $\frac{1}{2} \times 12 \times 16 = 96\ cm^2$.
(e) The area = $12 \times 6 = 72\ cm^2$.
(f) The area = $\frac{1}{2} \times 6 \times 15 = 45\ cm^2$.
(g) The area = $6 \times 3 = 18\ cm^2$.
(h) The area = $\frac{1}{2} \times 12 \times 16 = 96\ cm^2$.
(i) The area = $\frac{1}{2} \times 14.4 \times 9.2 = 66.24\ cm^2$.
(j) The area = $3.5 \times 3.1 = 10.85\ cm^2$.
(k) The area = $\frac{1}{2} \times 12 \times 14 = 84\ cm^2$.

3 The area = $6 \times 5 = 30\ cm^2$.

4 The area = $\frac{1}{2} \times 3.4 \times 5.5 = 9.35\ cm^2$.

5 The height = $\frac{26}{6.5} = 4$ cm.

6 The side length = $\frac{54}{10} = 5.4$ cm.

7 The length of the other diagonal = $\frac{20}{\frac{1}{2} \times 5} = 8$ cm.

8 The length of the other diagonal = $\frac{240}{\frac{1}{2} \times 20} = 24$ cm.

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9

Diagonal length of rhombus	The other diagonal length of rhombus	Area of rhombus in square units
3 cm.	5.4 cm.	**8.1** cm^2
2.3 cm.	**4** cm.	4.6 cm^2
24 mm.	3 cm.	**360** mm^2
27 cm.	**6** dm.	8.1 dm^2
1.7 m.	**400** cm.	3.4 m^2

10 The area of the triangle $= \frac{1}{2} \times 10 \times 6$
$= 30\ cm^2$
The area of the rhombus $= 7 \times 4 = 28\ cm^2$
The area of the triangle is greater.

11 The area of the rhombus $= \frac{1}{2} \times 8 \times 5 = 20\ cm^2$
The area of the square $= 7 \times 7 = 49\ cm^2$
The area of the rhombus is smaller.

12 The area of the parallelogram $= 5.4 \times 4.1$
$= 22.14\ cm^2$
The area of the rhombus $= \frac{1}{2} \times 5.4 \times 4.1$
$= 11.07\ cm^2$
The area of the parallelogram is greater.

13 The height $= 8 \times 2 = 16$ cm.
The area $= 8 \times 16 = 128\ cm^2$

14 The length of the greater diagonal $= 3 \times 3 = 9$ cm.
The area $= \frac{1}{2} \times 3 \times 9 = 13.5\ cm^2$

15 The side length $= 36 \div 4 = 9$ cm.
The area $= 9 \times 5.2 = 46.8\ cm^2$

16 The area of the rhombus $= \frac{1}{2} \times 7 \times 9 = 31.5\ cm^2$
The side length $= \frac{31.5}{5} = 6.3$ cm.

17 The area of the parallelogram $= 12 \times 6 = 72\ cm^2$
The area of the rhombus $= 72\ cm^2$
The length of the other diagonal of the rhombus $= \frac{72}{\frac{1}{2} \times 10} = 14.4$ cm.

18 The area of the rhombus $= \frac{1}{2} \times 8 \times 16 = 64\ m^2$
The area of the square $= 64\ m^2 = (8 \times 8)\ m^2$
The side length of the square $= 8$ m.
The perimeter of the square $= 8 \times 4 = 32$ m.

19 The side length $= 24 \div 4 = 6$ cm.
The height = the area ÷ the side length
$= 30 \div 6 = 5$ cm.

20 The area $= 5 \times 4.8 = 24\ cm^2$
The length of the other diagonal $= \frac{24}{\frac{1}{2} \times 6} = 8$ cm.

21 The area $= \frac{1}{2} \times 96 = 48\ cm^2$
The side length $= 48 \div 6 = 8$ cm.

22
(a) The area $= \frac{1}{2} \times 6 \times 8 = 24$ square unit
(b) The area $= \frac{1}{2} \times 2 \times 8 = 8$ square unit
(c) The area $= (\frac{1}{2} \times 4 \times 6) + (3 \times 3)$
$= 12 + 9 = 21$ square unit
(d) The area $= (\frac{1}{2} \times 6 \times 6) + (\frac{1}{2} \times 3 \times 3)$
$= 18 + 4.5 = 22.5$ square unit

23
(a) The area of the coloured region $= (6 \times 6)$
$- (\frac{1}{2} \times 6 \times 6) = 36 - 18 = 18$ square unit
(b) The area of the coloured region
$= (\frac{1}{2} \times 6 \times 8) - (2 \times 3) = 24 - 6$
$= 18$ square unit
(c) The area of the coloured region $= (8 \times 7)$
$- (\frac{1}{2} \times 4 \times 6) = 56 - 12 = 44$ square unit
(d) The area of the coloured region
$= (\frac{1}{2} \times 8 \times 6) - (\frac{1}{2} \times 2 \times 5)$
$= 24 - 5 = 19$ square unit

24 The area of the rhombus XYZT $= \frac{1}{2} \times 18 \times 10$
$= 90\ cm^2$

25 The area of the rhombus $= \frac{1}{2} \times 16 \times 12$
$= 96\ cm^2$
The length of $\overline{DE} = 96 \div 10 = 9.6$ cm.
The length of $\overline{DF} = 96 \div 10 = 9.6$ cm.
The heights of a rhombus are equal in length.

26 The area of the rhombus $= \frac{1}{2} \times 14 \times 8$
$= 56\ cm^2$
The side length of the rhombus $= 32 \div 4$
$= 8$ cm.
The height of the rhombus $= 56 \div 8 = 7$ cm.

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Answers of exercise 5

1 (a) The circumference = 5 × 3.14 = 15.7 cm.

(b) The circumference = 20 × 3.14 = 62.8 cm.

(c) The circumference = 2 × 3.14 × 25
= 157 mm. = 15.7 cm.

(d) The circumference = 2 × 3.14 × 20
= 125.6 cm.

2 (a) The circumference = $2 \times \frac{22}{7} \times 35 = 220$ cm.

(b) The circumference = $21 \times \frac{22}{7} = 66$ m.

(c) The circumference = $28 \times \frac{22}{7}$
= 88 mm. = 8.8 cm.

(d) The circumference = $2 \times \frac{22}{7} \times 7 = 44$ m.

3 (a) The circumference = $2 \times \frac{22}{7} \times 48$
≃ 301.7 cm.

(b) The circumference = $2 \times \frac{22}{7} \times 14$
= 88 cm.

(c) The circumference = $2 \times \frac{22}{7} \times 10\frac{1}{2}$
= 66 cm.

(d) The circumference = $2 \times \frac{22}{7} \times 3.5$
= 22 cm.

4 (a) The circumference = 3.14 × 10 = 31.4 cm.

(b) The circumference = 3.14 × 100 = 314 cm.

(c) The circumference = 3.14 × 50 = 157 cm.

5 The circumference = 3.14 × 15.4 ≃ 48.36 cm.

6 The circumference = $2 \times \frac{22}{7} \times 0.42 \simeq 3$ m.

7 (a) The radius length = $\frac{88}{2 \times \frac{22}{7}} = 14$ cm.

(b) The radius length = $\frac{36.11}{2 \times 3.14} = 5.75$ cm.

8 The diameter length = $66 \div \frac{22}{7} = 21$ cm.

9 The diameter length = $\frac{2 \times 314}{3.14} = 200$ cm.

10

Radius length	Diameter length	π	Circumference
7 cm.	14 cm.	$\frac{22}{7}$	44 cm.
10 cm.	20 cm.	3.14	62.8 cm.
12 cm.	24 cm.	3.14	75.36 cm.
49 mm.	98 mm.	$\frac{22}{7}$	308 mm.

11 The circumference of the circle = $2 \times \frac{22}{7} \times 7.7$
= 48.4 cm.

The perimeter of the rectangle
= (5.3 + 4.8) × 2 = 10.1 × 2 = 20.2 cm.
The circumference of the circle is greater.

12 The circumference of the first circle
= $2 \times \frac{22}{7} \times 14 = 88$ cm.
The circumference of the second circle
= $2 \times \frac{22}{7} \times 9.8 = 61.6$ cm.
The difference = 88 – 61.6 = 26.4 cm.

13 The circumference of the first circle
= 20 × 3.14 = 62.8 cm.
The circumference of the second circle
= 40 × 3.14 = 125.6 cm.
The difference = 125.6 – 62.8 = 62.8 cm.

14 (a) the radius length (b) 10 (c) 22
(d) $2 \times \pi$ (e) 5 (f) 100

15 (a) $2\pi r$ (b) 22 (c) 8
(d) 14 (e) 2π (f) $4\pi r$
(g) $\frac{\text{circumference}}{2r}$ (h) 8 (i) 40π

16 (a) The length of the semicircle = $14 \times \frac{22}{7} = 44$ cm.
The perimeter of the figure = 44 + 28 = 72 cm.

(b) The perimeter = $\frac{1}{4} \times (2 \times 7 \times \frac{22}{7}) + 7 + 7$
= 11 + 7 + 7 = 25 cm.

(c) The perimeter = $(7 \times \frac{22}{7}) + 14 + 14$
= 22 + 14 + 14 = 50 cm.

(d) The perimeter = $(\frac{1}{2} \times 70 \times \frac{22}{7}) + 150$
+ 70 + 150 = 110 + 150
+ 70 + 150 = 580 cm.

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e The perimeter = $(2 \times 5.25 \times \frac{22}{7}) + 10.5 + 10.5$
= 33 + 10.5 + 10.5 = 54 cm.

f The perimeter = $(3 \times 3.5 \times \frac{22}{7}) + 7$
= 33 + 7 = 40 cm.

17 a The perimeter = (2 × 7 × 3.14) + 7 + 7
= 43.96 + 7 + 7 = 57.96 cm.

b The perimeter
= (3 × 3.14) + (8 × 3.14) + 6 + 16
= 9.42 + 25.12 + 6 + 16 = 56.54 cm.

c The perimeter = (2.5 × 3.14) + 3 + 4
= 7.85 + 7 = 14.85 cm.

d The perimeter = (60 × 3.14) + 130 + 130
= 188.4 + 130 + 130
= 448.4 cm.

e The perimeter
= (3 × 3.14) + (4 × 3.14) + (5 × 3.14)
= 9.42 + 12.56 + 15.7 = 37.68 cm.

f The perimeter = 2 × 20 × 3.14 = 125.6 cm.

18 The perimeter of the rectangle
= (13 + 9) × 2 = 22 × 2 = 44 cm.
The circumference of the circle = 44 cm.
$r = \frac{c}{2\pi} = \frac{44}{2 \times \frac{22}{7}} = 7$ cm.

19 The perimeter of the square = 22 × 4 = 88 cm.
The circumference of the circle
$= \frac{1}{2} \times 88 = 44$ cm.
$d = \frac{c}{\pi} = \frac{44}{\frac{22}{7}} = 14$ cm.

20 The circumference of the circle
$= 2 \times 10.5 \times \frac{22}{7} = 66$ cm.
The perimeter of the square $= \frac{1}{3} \times 66 = 22$ cm.
The side length of the square $= \frac{\text{The perimeter}}{4}$
$= \frac{22}{4} = 5.5$ cm.

21 The circumference of the wheel = 66 × 3.14
= 207.24 cm.
= 2.0724 m.
The distance = 2.0724 × 1000 = 2072.4 m.

22 The distance covered with one turn = $56 \times \frac{22}{7}$
= 176 cm.
= 1.76 m.
The number of turns = 352 ÷ 1.76 = 200 turns.

23 The circumference of the base = $3.5 \times \frac{22}{7}$
= 11 cm.

24 a 10 b 22
c The radius length = $\frac{22}{2 \times \frac{22}{7}} = 3.5$ cm.

25 The perimeter = $2 \times 10.5 \times \frac{22}{7} = 66$ m.
The cost = 66 × 75 = L.E. 4 950

26 a 37.85 b 47 c 44
d 44 e 115.65

27 a The perimeter
$= (21 \times \frac{22}{7}) + (14 \times \frac{22}{7}) + 7 + 7$
= 66 + 44 + 7 + 7 = 124 cm.

b The perimeter = $(7 \times \frac{22}{7}) + 7 + 7 + 7 + 7$
= 22 + 28 = 50 cm.

c The perimeter
$= (3.5 \times \frac{22}{7}) + 7 + 2 + 6 + 2 + 7$
= 11 + 7 + 2 + 6 + 2 + 7 = 35 cm.

Answers of general exercise on unit Three

First Completion questions

1 44	2 30	3 96	4 9
5 7	6 24	7 π	8 40
9 6	10 2	11 10	12 72
13 16	14 12		

15 a 6 , 24 b CB , 24 , 4.8

16 a 14 b 7 c 84 d 21 e 63

Second Multiple-choices questions

1 96	2 30	3 32	4 21
5 4	6 10	7 20	8 48
9 22	10 14	11 15	12 36
13 30	14 20		

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Unit three

Third Essay questions

1 The area of the rhombus = $\frac{1}{2} \times 6 \times 8 = 24$ cm^2

The area of the square = $\frac{1}{2} \times 8 \times 8 = 32$ cm^2

The area of the square is greater.

2 The area of the square = $\frac{1}{2} \times 10 \times 10 = 50$ cm^2

The area of the triangle = $\frac{1}{2} \times 8 \times 15 = 60$ cm^2

The area of the triangle is greater.

3 The area of the square = $\frac{1}{2} \times 12 \times 12 = 72$ cm^2

The area of the rectangle = 72 cm^2

The length of the rectangle = 72 ÷ 8 = 9 cm.

The perimeter of the rectangle = 2 × (9 + 8) = 34 cm.

4 (a) The area of the rhombus = $\frac{1}{2} \times 12 \times 16$

= 96 cm^2

(b) The side length = 96 ÷ 9.6 = 10 cm.

(c) The perimeter = 4 × 10 = 40 cm.

5 The distance = 50 × 1200 = 60000 cm.

= 600 m.

6 The side length of the square ABCD

= 60 ÷ 4 = 15 cm.

The area of the square ABCD

= 15 × 15 = 225 cm^2

The length of $\overline{CE}$ = 35 – 15 = 20 cm.

The area of the triangle ECD = $\frac{1}{2} \times 20 \times 15$

= 150 cm^2

The area of the figure ABED = 225 + 150

= 375 cm^2

7 (a) The height of the triangle ABE

$= \frac{78}{\frac{1}{2} \times 12} = 13$ cm.

The area of the parallelogram ABCD

= 24 × 13 = 312 cm^2

(b) The length of $\overline{AB}$ = 312 ÷ 15 = 20.8 cm.

(c) The perimeter of the parallelogram ABCD

= 2 × (24 + 20.8) = 89.6 cm.

8 (a) The area of Δ ABC = $\frac{1}{2} \times 20 \times 8 = 80$ cm^2

(b) The length of $\overline{BE} = \frac{80}{\frac{1}{2} \times 16} = 10$ cm.

9 (a) The side length = 40 ÷ 4 = 10 cm.

(b) The area = $\frac{1}{2} \times 12 \times 16 = 96$ cm^2

(c) The height = 96 ÷ 10 = 9.6 cm.

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Answers of unit Four

Answers of exercise 6

1 a translation b rotation c reflection
d reflection e translation f rotation
g rotation h rotation i translation
j reflection k reflection l translation
m reflection n reflection or rotation
o translation

2 a Translation b Rotation c Reflection

3 a Rotation b Reflection c Translation

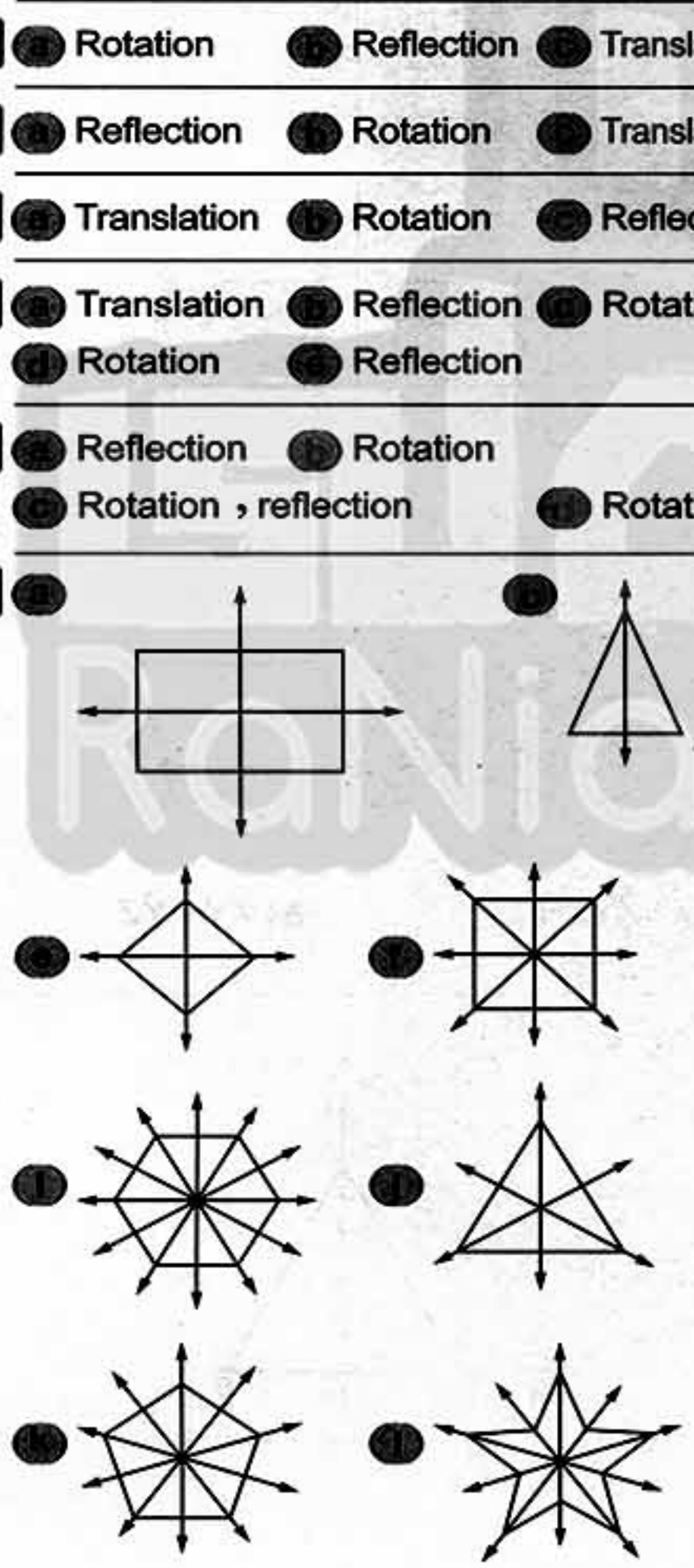
4 a Reflection b Rotation c Translation

5 a Translation b Rotation c Reflection

6 a Translation b Reflection c Rotation
d Rotation e Reflection

7 a Reflection b Rotation
c Rotation , reflection d Rotation

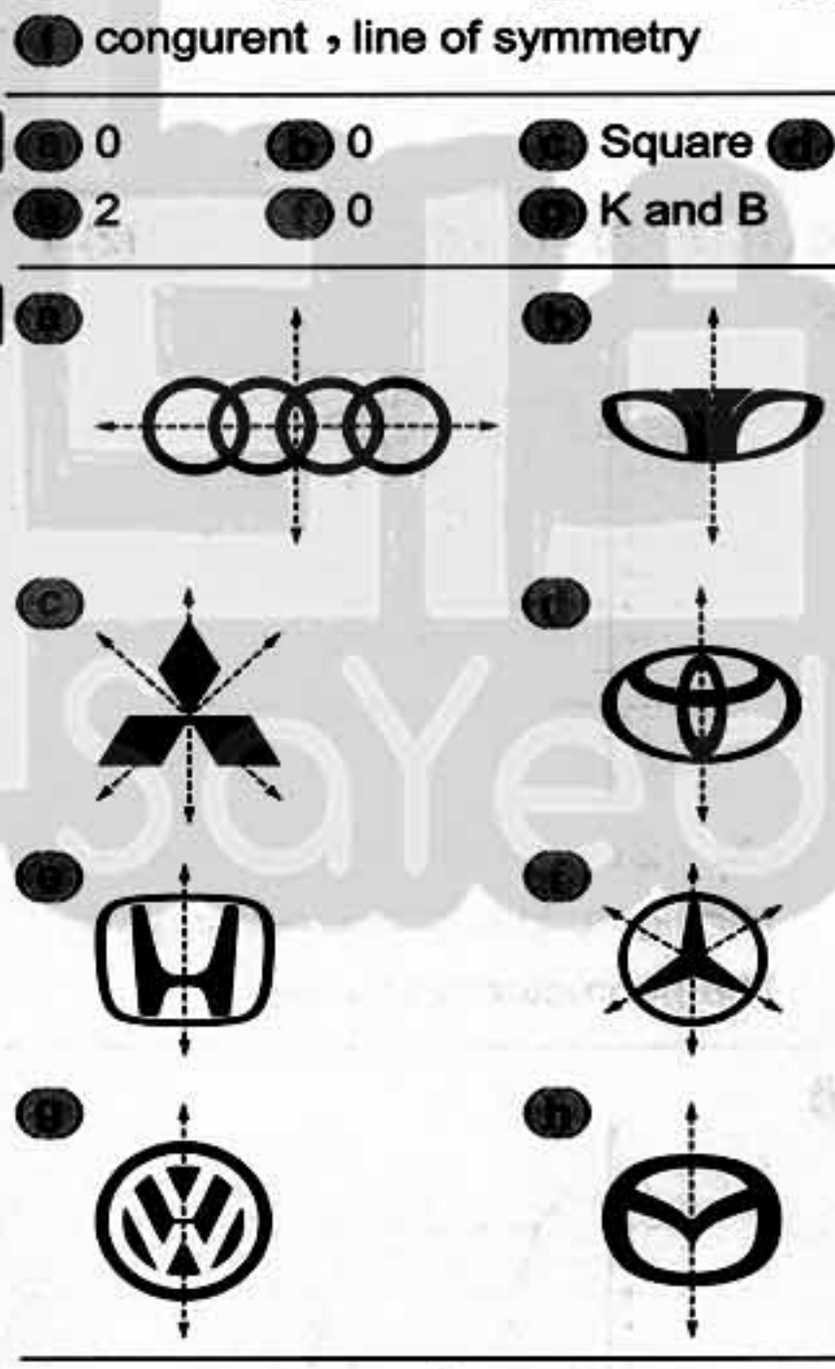
8



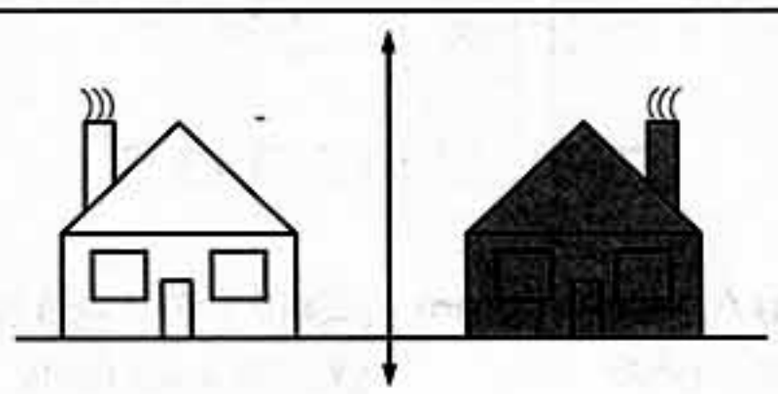
9 a identical b 1 c 3 d 1
e 4 f 2 g 2 h 6
i congurent , line of symmetry

10 a 0 b 0 c Square d 5
e 2 f 0 g K and B

11



12



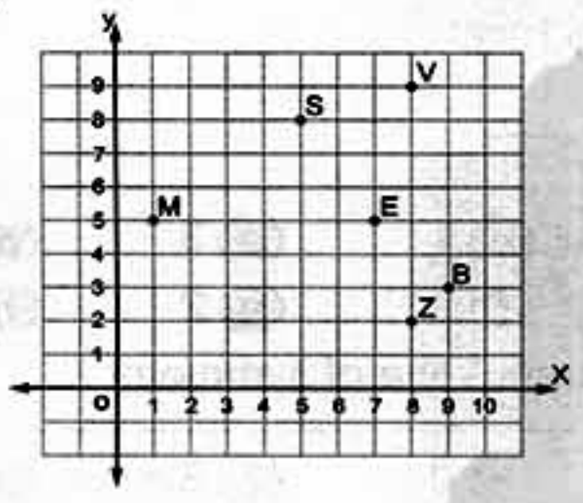
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Answers of exercise 7

1 **a** (1) G (2) P (3) L (4) D
(5) J (6) T (7) R (8) Q
(9) H (10) A

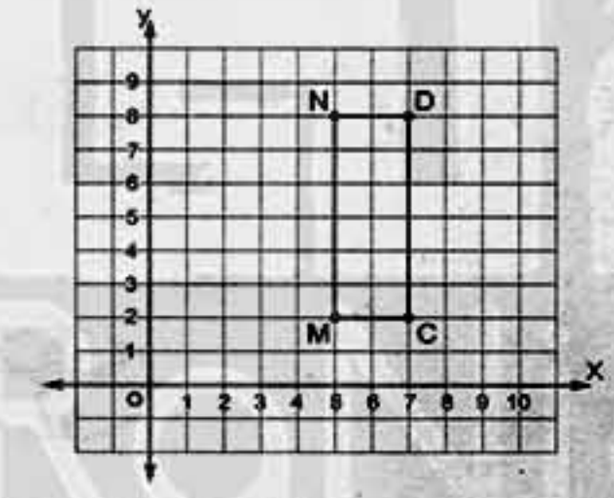
b (1) (8 , 7) (2) (0 , 3) (3) (7 , 0)
(4) (9 , 9) (5) (2 , 1) (6) (2 , 8)
(7) (5 , 0) (8) (3 , 6) (9) (1 , 1)

c



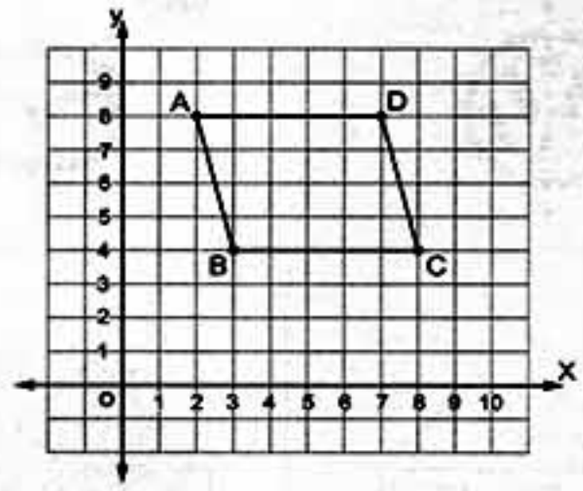
2 **a** (1) (7 , 2) , (7 , 8) (2) 4 , 6

b



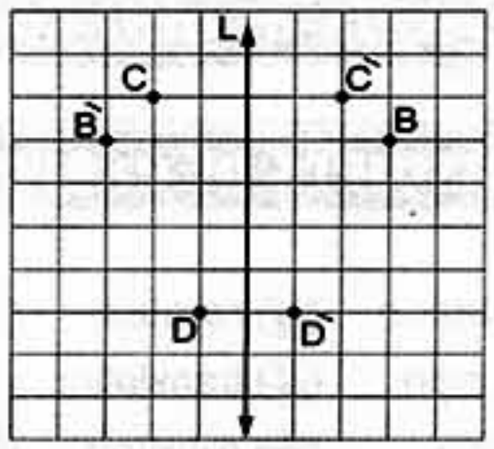
CM = 2 units , MN = 6 units , ND = 2 units
The figure MNDC is a rectangle.
The perimeter is 16 units.

3 **a**

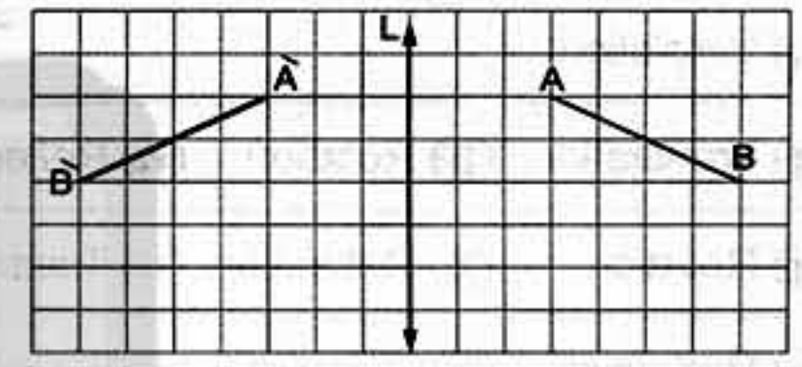


b A parallelogram **c** (5 , 6) **d** (5 , 6)
e 5 units **f** 20 area units

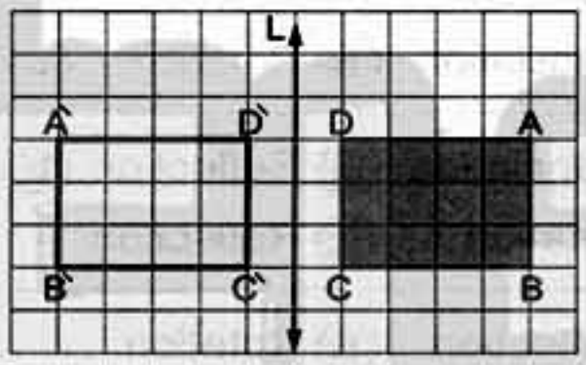
4



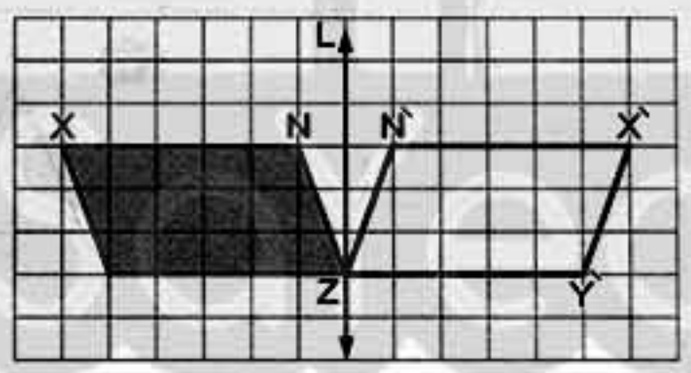
5 **a**



b

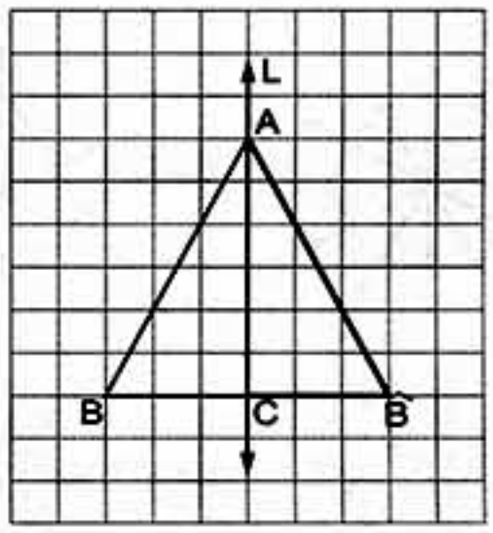


6



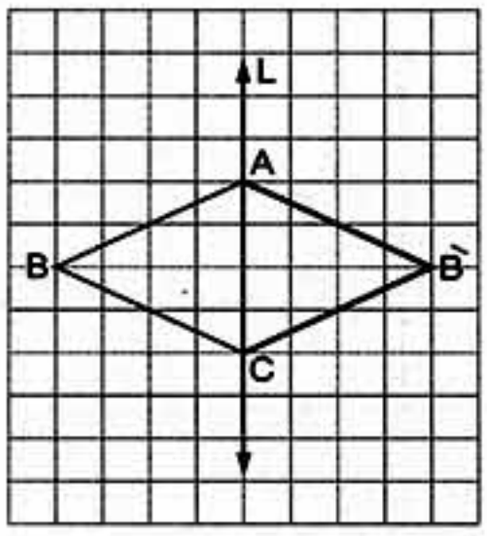
a X`Y`ZN` **b** X`Y` , Y`Z

7 **a**

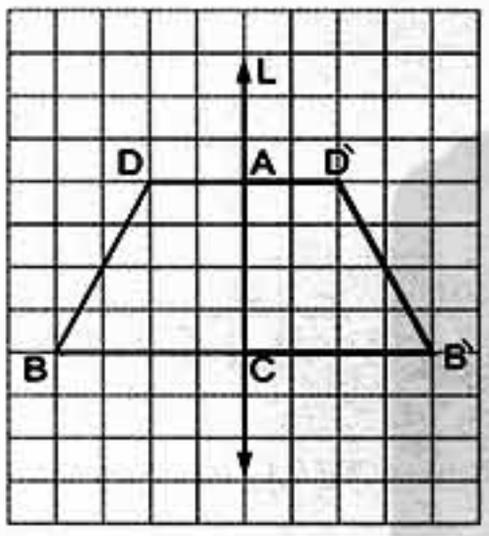


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b



c



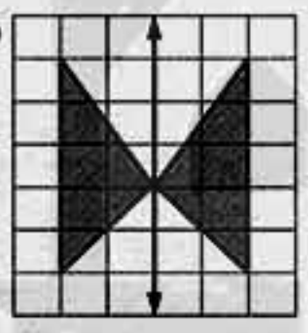
(1) congruent **(2)** itself , lies on L

(3) itself , lies on L **(4)** itself

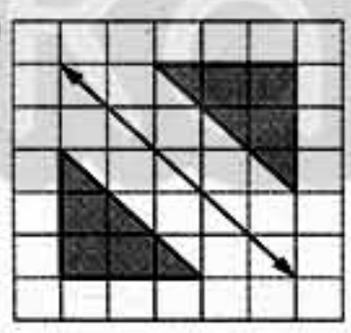
8 **a**



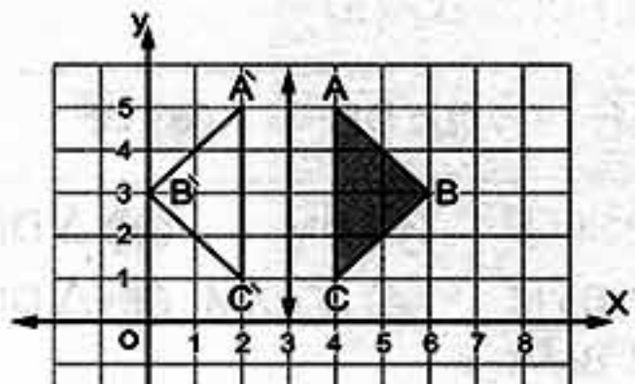
b



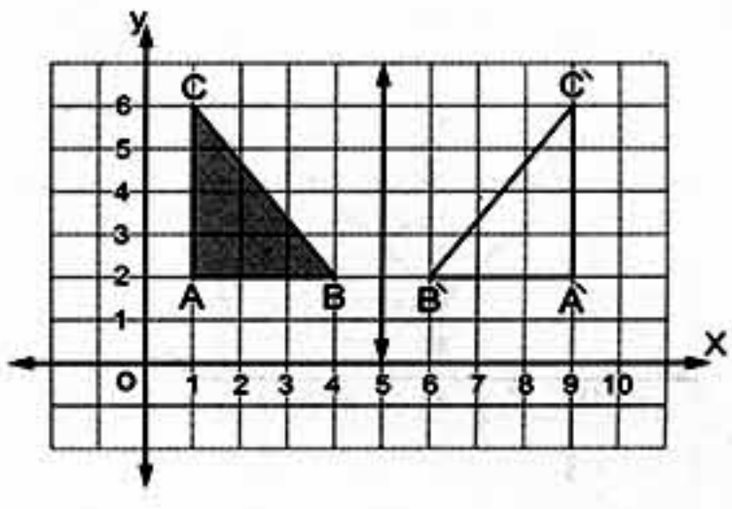
c



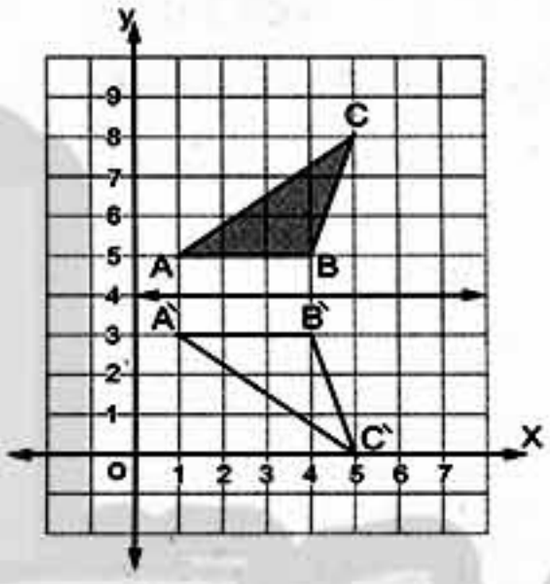
9 **a**



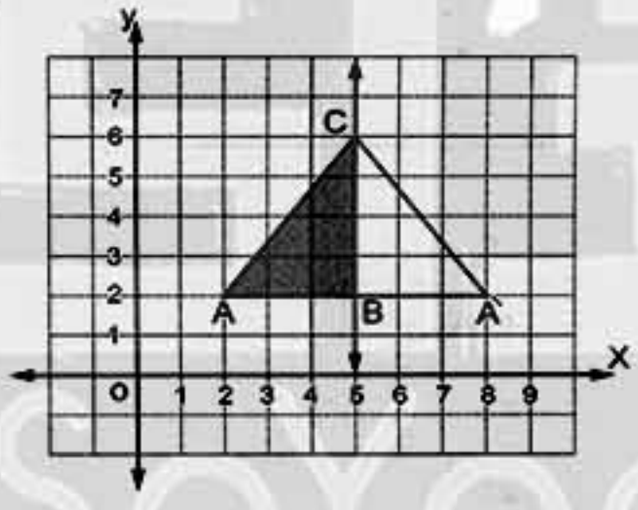
b



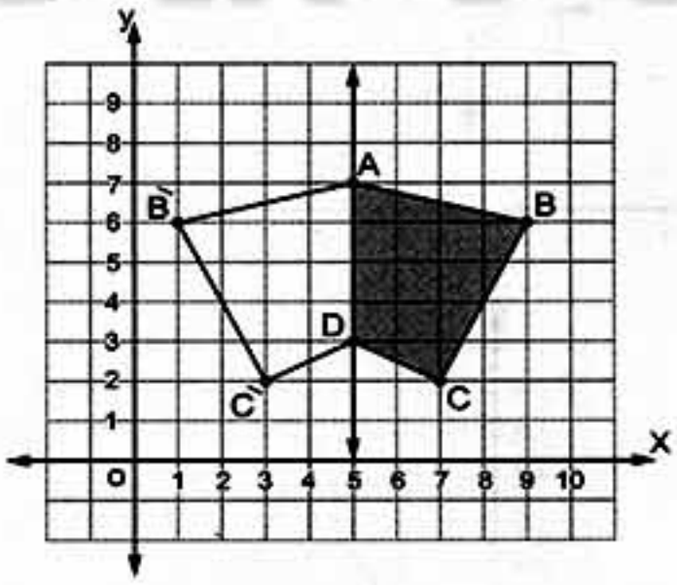
c



d



10 **a** A (5 , 7) , B (9 , 6) , C (7 , 2) , D (5 , 3)



b **(1)** B̀ (1 , 6) **(2)** C̀ (3 , 2) **(3)** À (5 , 7)

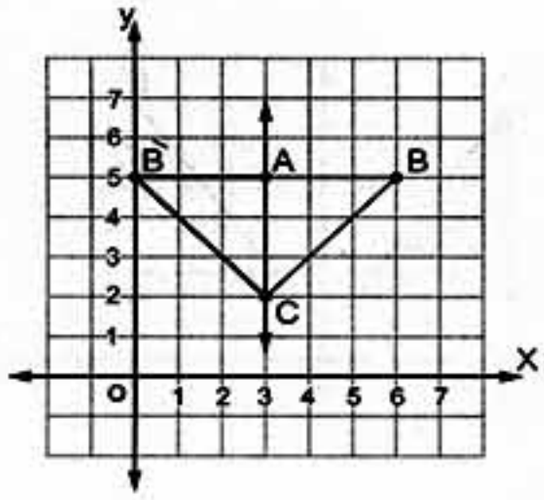
(4) D̀ (5 , 3) **(5)** Δ B̀ C̀ D

(6) A B̀ C̀ D

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Unit four

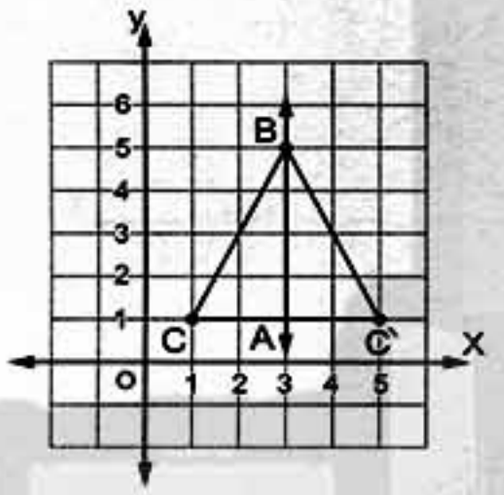
11 (a)



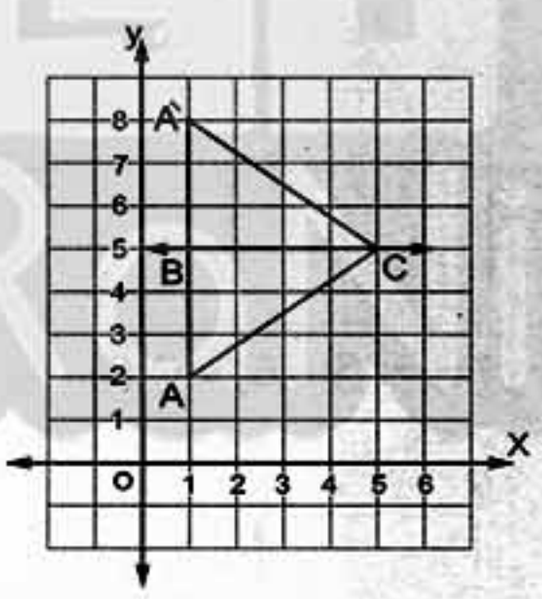
(b) 3 units (c) 3 units

(d) A (3 , 5) , B (0 , 5) , C (3 , 2)

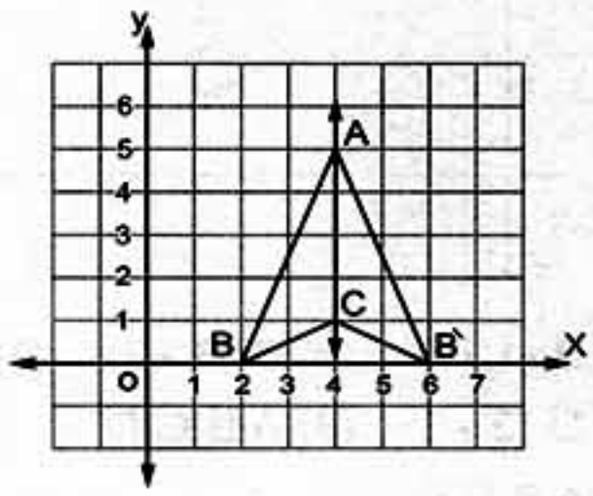
12



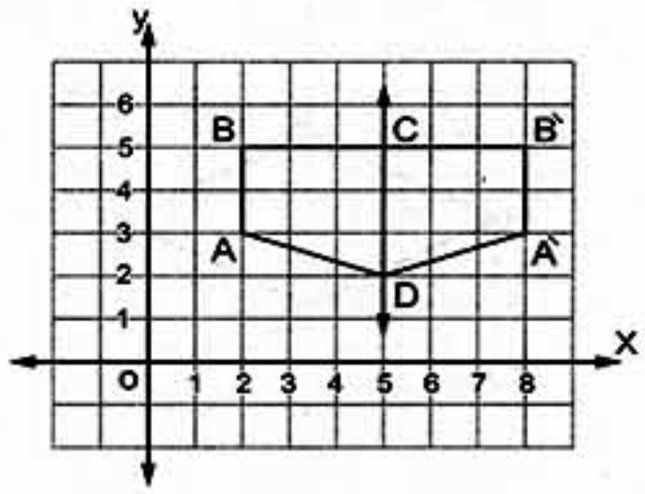
13



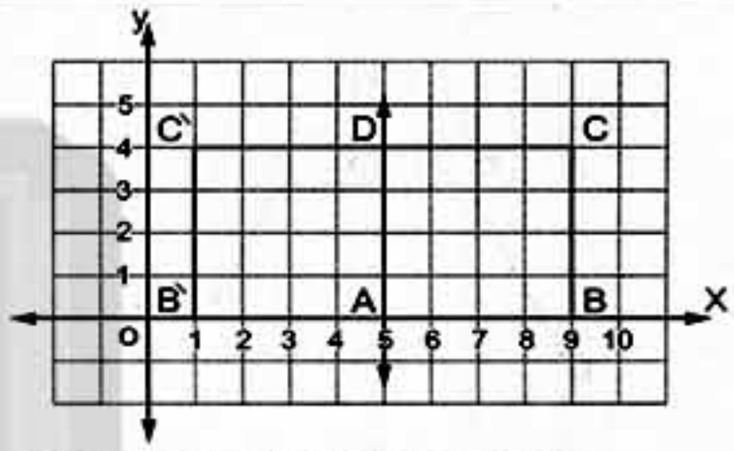
14



15



16

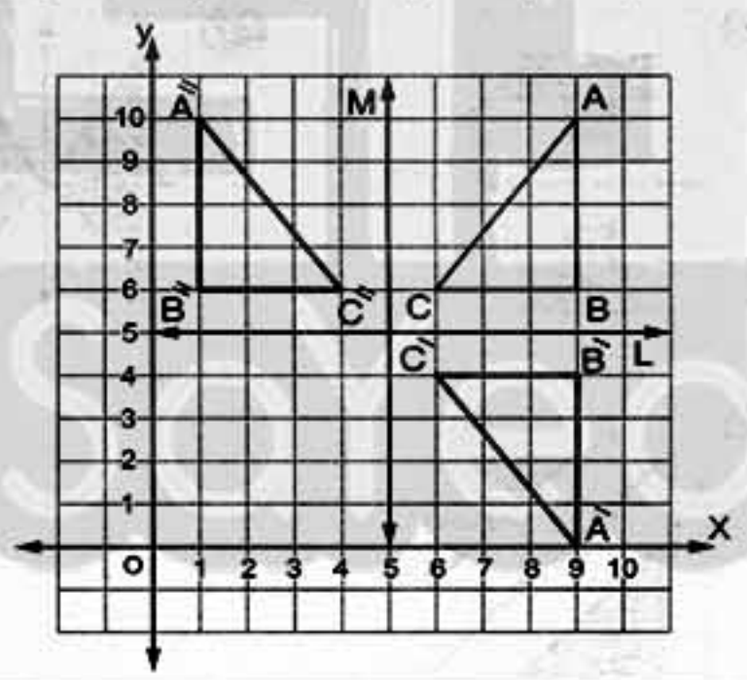


The figure ABCD is a square

17 (a) A (9 , 10) , B (9 , 6) , C (6 , 6)

(b) $\grave{A}$ (9 , 0) , $\grave{B}$ (9 , 4) , $\grave{C}$ (6 , 4)

(c) $\grave{A}$ (1 , 10) , $\grave{B}$ (1 , 6) , $\grave{C}$ (4 , 6)



18 (a) Δ EBC , EB , EC

(b) Δ ECD , ED , itself

(c) Δ EBC , Δ ACD

19 (a) $\overleftrightarrow{EF}$ (b) $\overleftrightarrow{DF}$ (c) $\overleftrightarrow{BF}$ (d) $\overleftrightarrow{BF}$

20 (a) Point D (b) $\overline{BM}$ (c) Δ DLM

(d) Δ BYM (e) Δ AXM (f) Δ DMC

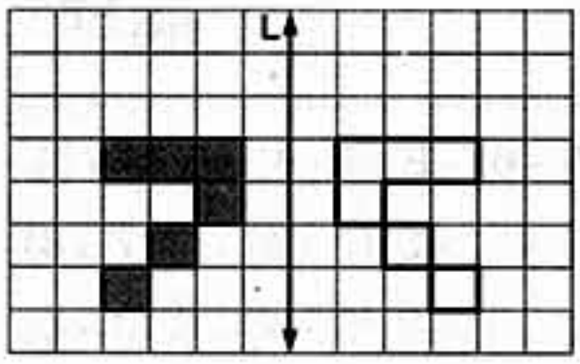
(g) Δ BMA

(h) The square DZML , the square ALMX

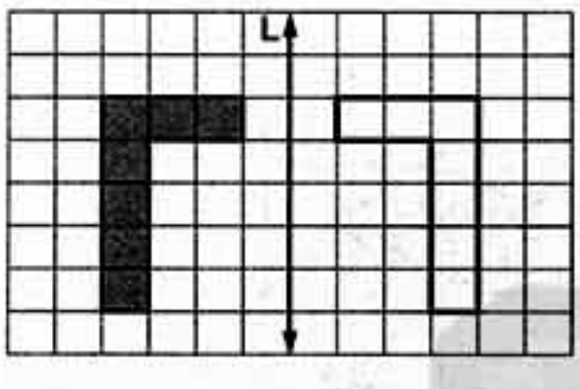
(i) the square DCBA (j) $\overleftrightarrow{MZ}$ (k) $\overleftrightarrow{BD}$

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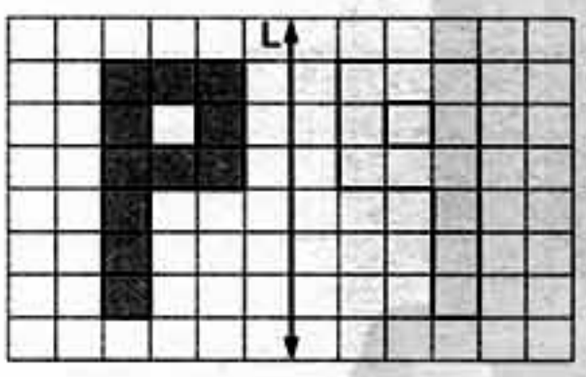
21 a



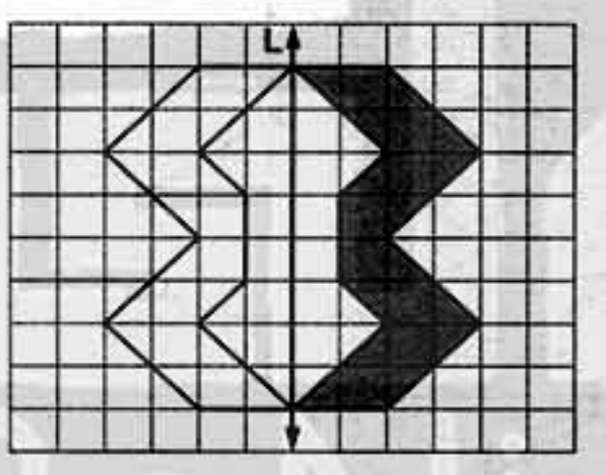
b



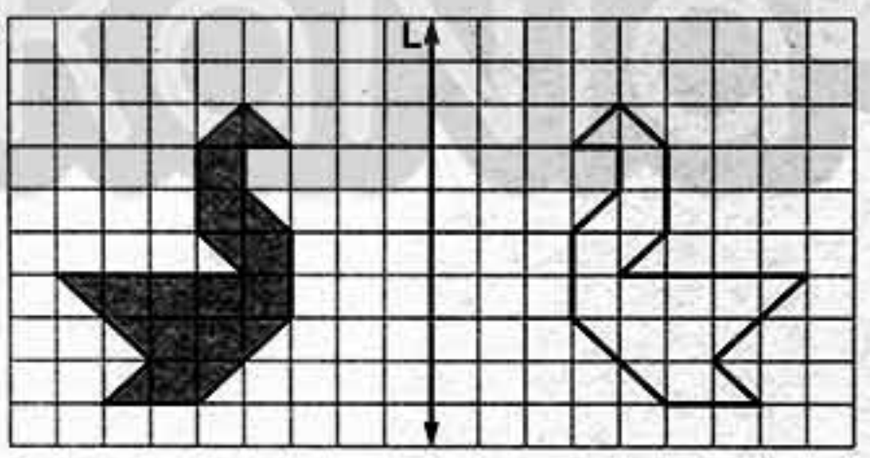
c



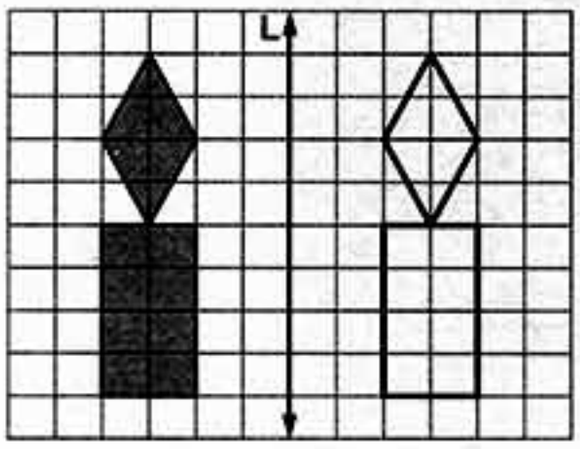
d



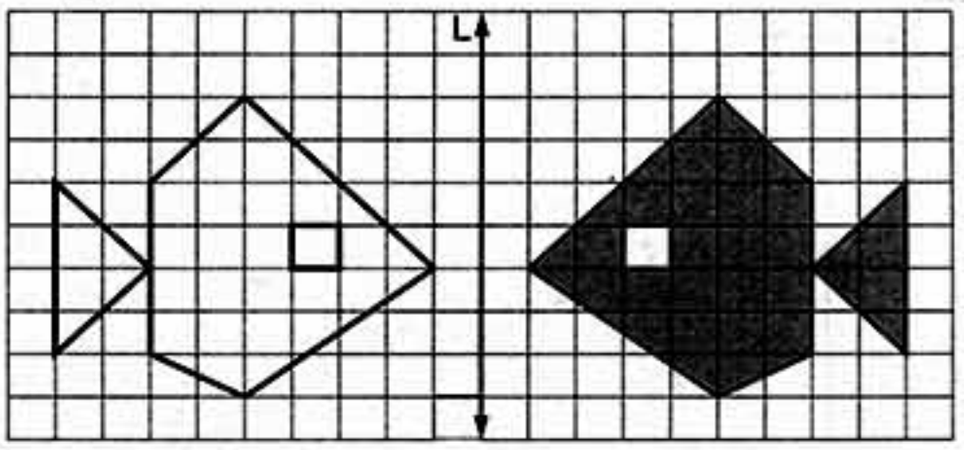
e



f



g

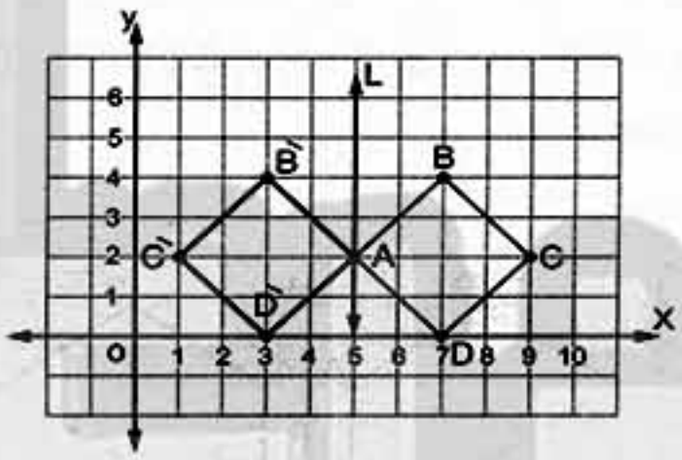


22



Answers of general exercise on unit Four

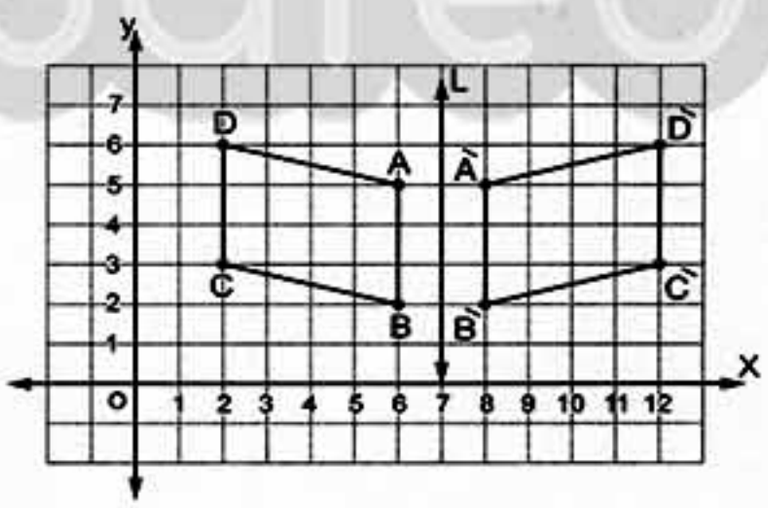
1



a (5 , 2)
b (3 , 4)
c (1 , 2)
d (3 , 0)

2 **First :** A (6 , 5) , B (6 , 2) , C (2 , 3) , D (2 , 6)

Second :

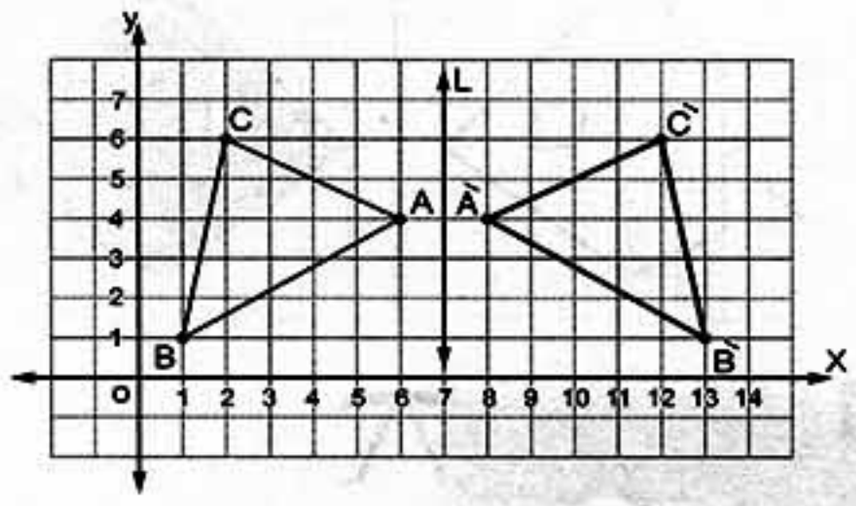


a Ā (8 , 5)
b B̄ (8 , 2)
c C̄ (12 , 3)
d D̄ (12 , 6)

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3 **First :** A (6 , 4) , B (1 , 1) , C (2 , 6)

Second :

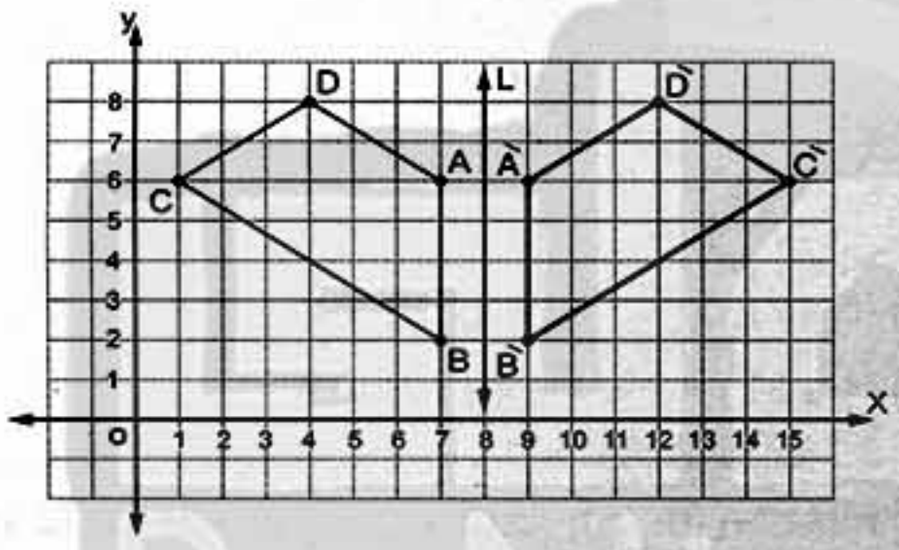


(a) À (8 , 4) (b) B̀ (13 , 1)

(c) C̀ (12 , 6)

4 **First :** A (7 , 6) , B (7 , 2) , C (1 , 6) , D (4 , 8)

Second :



(a) À (9 , 6) (b) B̀ (9 , 2)

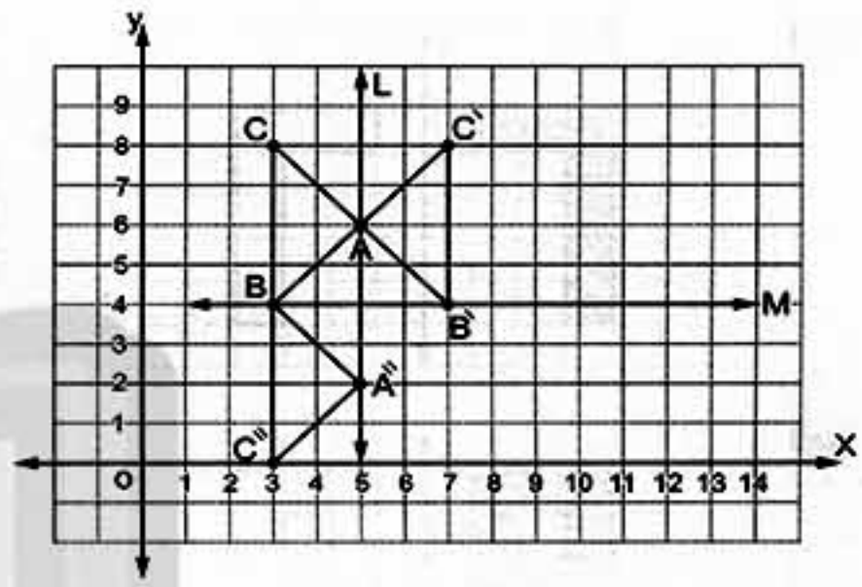
(c) C̀ (15 , 6) (d) D̀ (12 , 8)

5 (a) $\overleftrightarrow{EF}$ (b) $\overleftrightarrow{DF}$

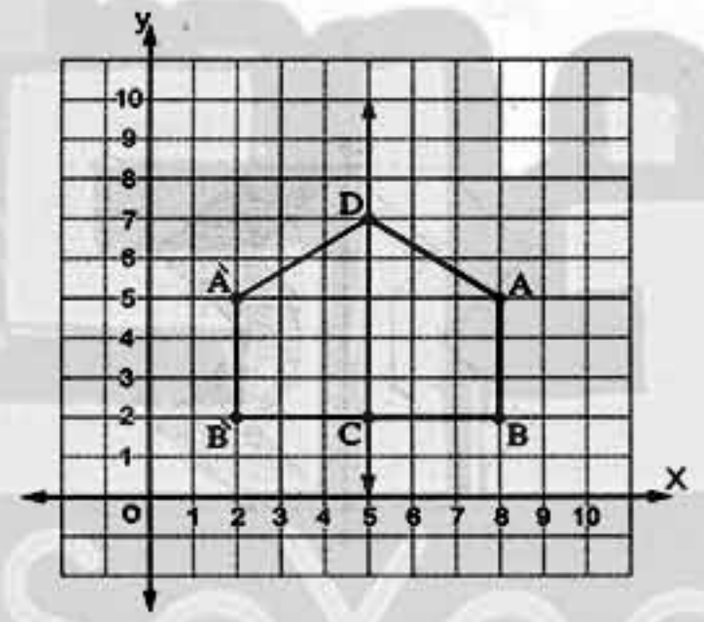
6 (a) A (5 , 6) , B (3 , 4) , C (3 , 8)

(b) À (5 , 6) , B̀ (7 , 4) , C̀ (7 , 8)

(c) À (5 , 2) , B̀ (3 , 4) , C̀ (3 , 0)



7



À (2 , 5) , B̀ (2 , 2) , C (5 , 2) , D (5 , 7)

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Answers of unit Five

Answers of exercise 8

1

Subject	Tally	Frequency
Mathematics	𝍸 ////	9
Science	𝍸 ///	8
History	𝍸 𝍸 //	12
Art	𝍸 𝍸 𝍸 /	16
Music	𝍸 𝍸	10

(a) Art. (b) Science.
(c) Mathematics. (d) 55 pupils.
(e) 15 pupils.

2

Preferred mean of transport	Tally	Frequency
Taxi	𝍸 ////	9
Bicycle	𝍸 𝍸 𝍸 𝍸 ///	23
Bus	𝍸 𝍸 𝍸 ///	18
Train	𝍸 𝍸 ////	14

(a) Bicycle. (b) Taxi.
(c) Bicycle. (d) 64 pupils.

3

Degree	Tally	Frequency
Excellent	/	1
Very good	//	2
Good	𝍸 /	6
Pass	𝍸 //	7
Weak	///	3
Very weak	/	1
Total		20

Degree	Excellent	Very good	Good	Pass	Weak	Very weak	Total
Frequency	1	2	6	7	3	1	20

4

Wages	Tally	Frequency
85	𝍸 //	7
86	𝍸	5
87	𝍸	5
88	𝍸	5
89	//	2
90	𝍸 /	6
Total		30

Wages	85	86	87	88	89	90	Total
Frequency	7	5	5	5	2	6	30

5

Ages	Tally	Frequency
14	𝍸 /	6
15	𝍸 𝍸 /	11
16	𝍸 𝍸 ////	14
17	𝍸 𝍸 𝍸 /	16
18	𝍸 ////	9
19	///	3
20	/	1
Total		60

Ages	14	15	16	17	18	19	20	Total
Frequency	6	11	14	16	9	3	1	60

6

Sets	Tally	Frequency
10 –	////	4
15 –	///	3
20 –	𝍸	5
25 –	////	4
Total		16

Sets	10 –	15 –	20 –	25 –	Total
Frequency	4	3	5	4	16

7

Sets	Tally	Frequency
15 –	//	2
25 –	///	3
35 –	𝍸	5
45 –	𝍸 ///	8
55 –	𝍸 /	6
65 –	////	4
75 –	//	2
Total		30

Sets	15 –	25 –	35 –	45 –	55 –	65 –	75 –	Total
Frequency	2	3	5	8	6	4	2	30

8

Sets	Tally	Frequency
0 –	//	2
4 –	𝍸 //	7
8 –	𝍸 𝍸 //	12
12 –	𝍸 𝍸 𝍸	15
16 –	////	4
Total		40

Sets	0 –	4 –	8 –	12 –	16 –	Total
Frequency	2	7	12	15	4	40

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9

Sets	Tally	Frequency
11 –	𝍸 𝍸	10
16 –	////	4
21 –	𝍸 𝍸 ///	13
26 –	𝍸 𝍸 ///	13
Total		40

Sets	11 –	16 –	21 –	26 –	Total
Frequency	10	4	13	13	40

10 **First :** 25 , 50

Second :

Ages	Tally	Frequency
25 –	//	2
30 –	///	3
35 –	𝍸 ////	9
40 –	𝍸 ///	8
45 –	𝍸 ///	8
50 –	//	2
Total		32

Sets	25 –	30 –	35 –	40 –	45 –	50 –	Total
Frequency	2	3	9	8	8	2	32

yes , we can display those data in another way by using a different length for the sets.

11 (a)

	Saturday	Sunday	Monday	Tuesday	Wednesday
Number of canned drinks sold	28	56	70	35	77

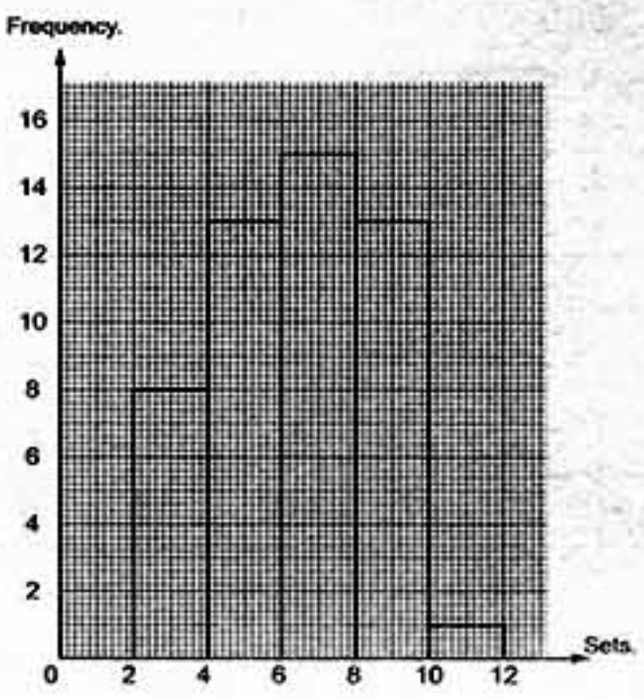
(b) The total number of cans
= 28 + 56 + 70 + 35 + 77 = 266 cans.

(c) The total profit = 266 × 42 = 11 172 piastres
= L.E. 11.172

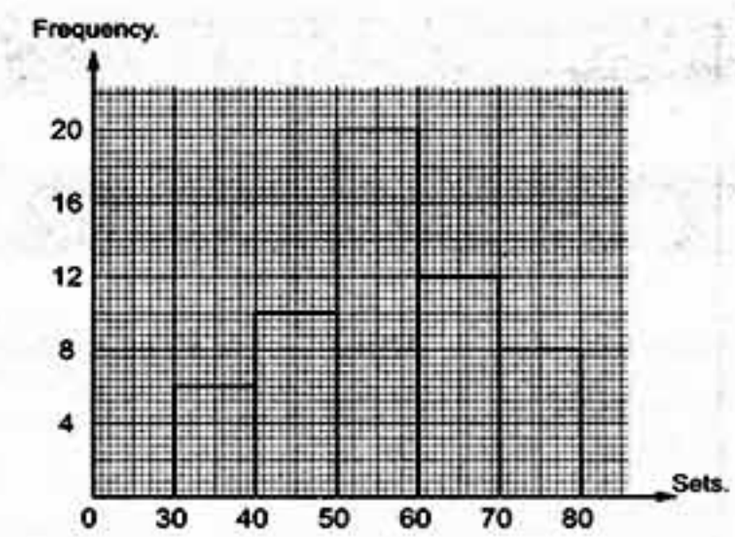
(d) 21

Answers of exercise 9

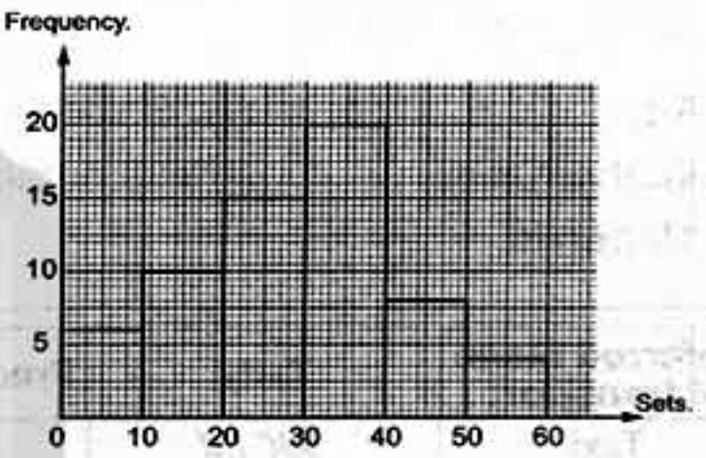
1



2

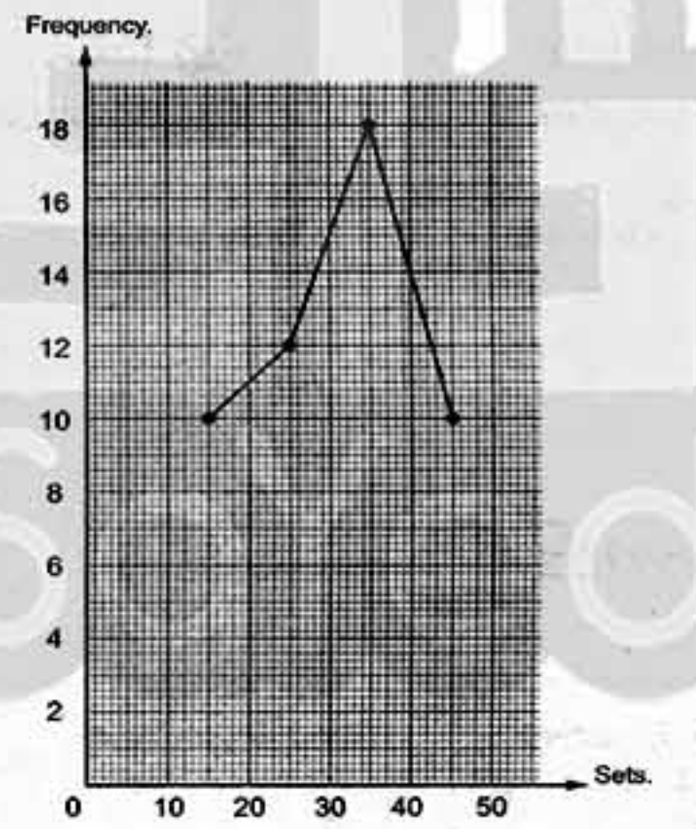


3 (a)

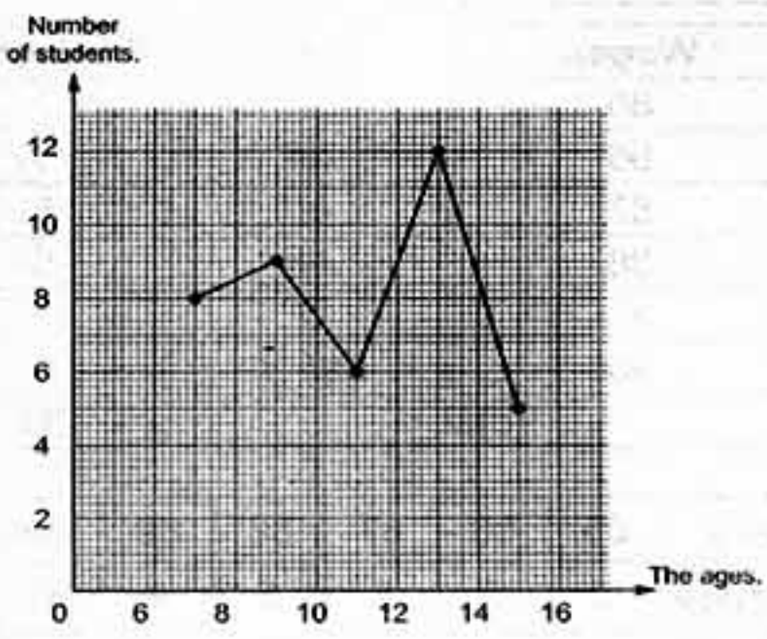


(b) (1) 16 students.
(2) 12 students.

4

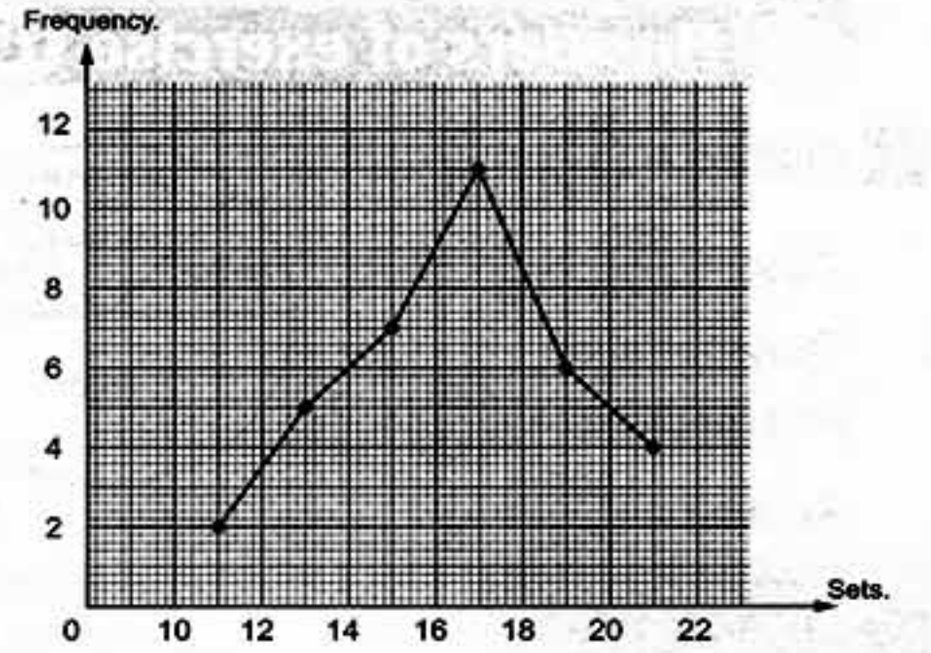


5



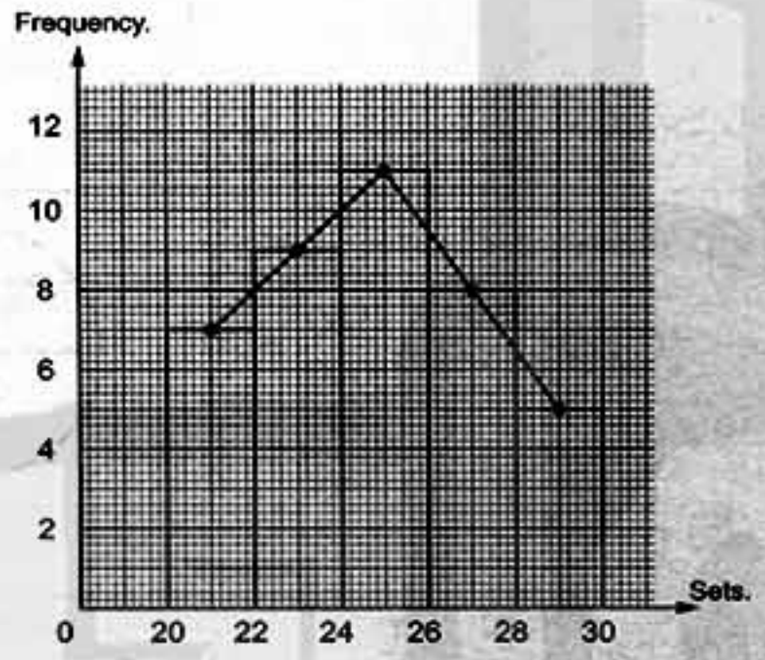
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6



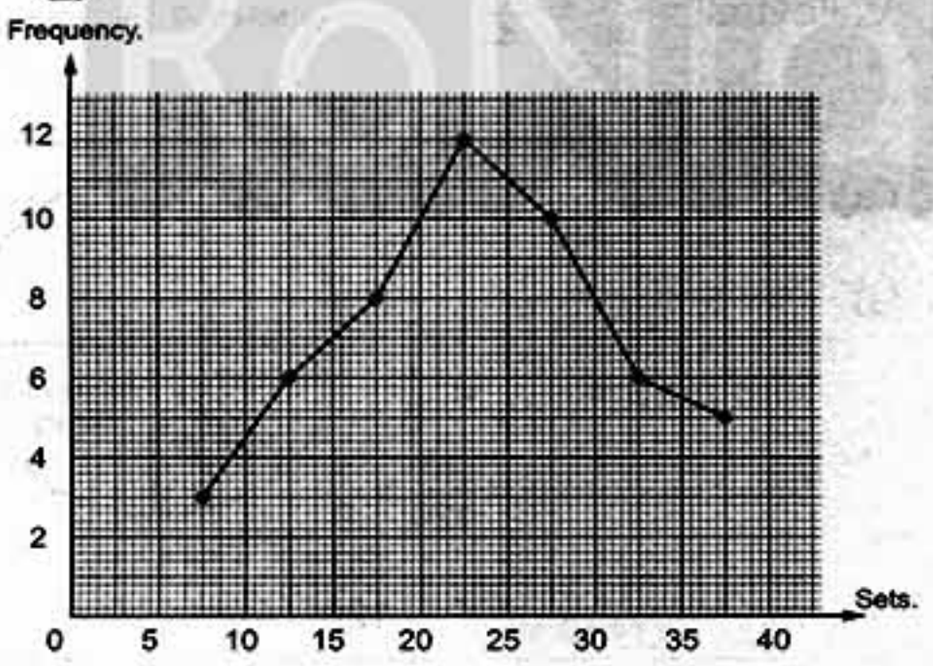
7 (a) 16 cities

(b)



8 (a) 11 students

(b)

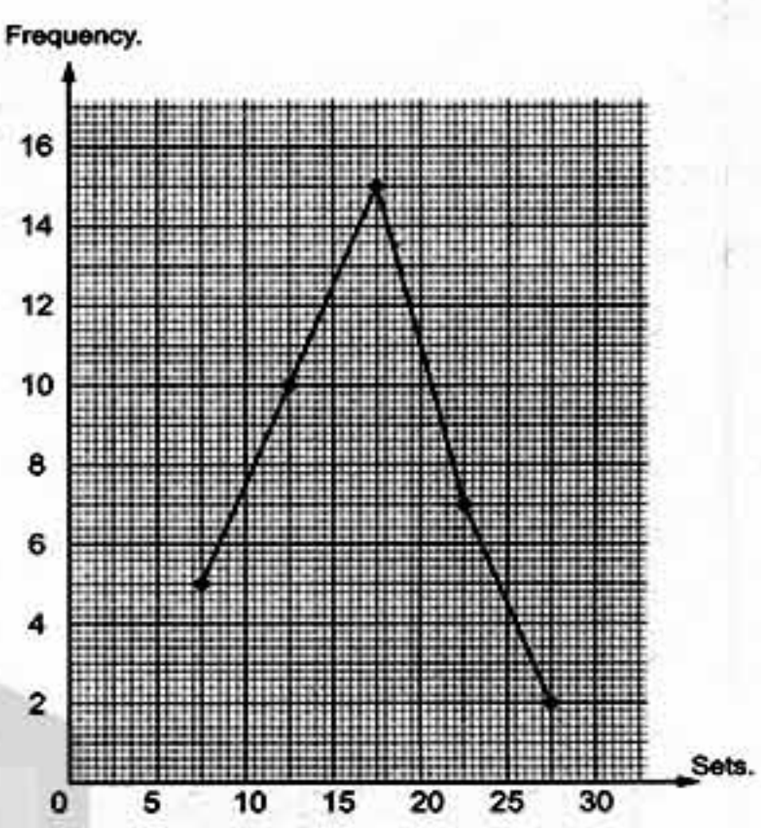


9 (a)

Sets	5 –	10 –	15 –	20 –	25 –
Frequency	5	10	15	7	2

(b) 15 students

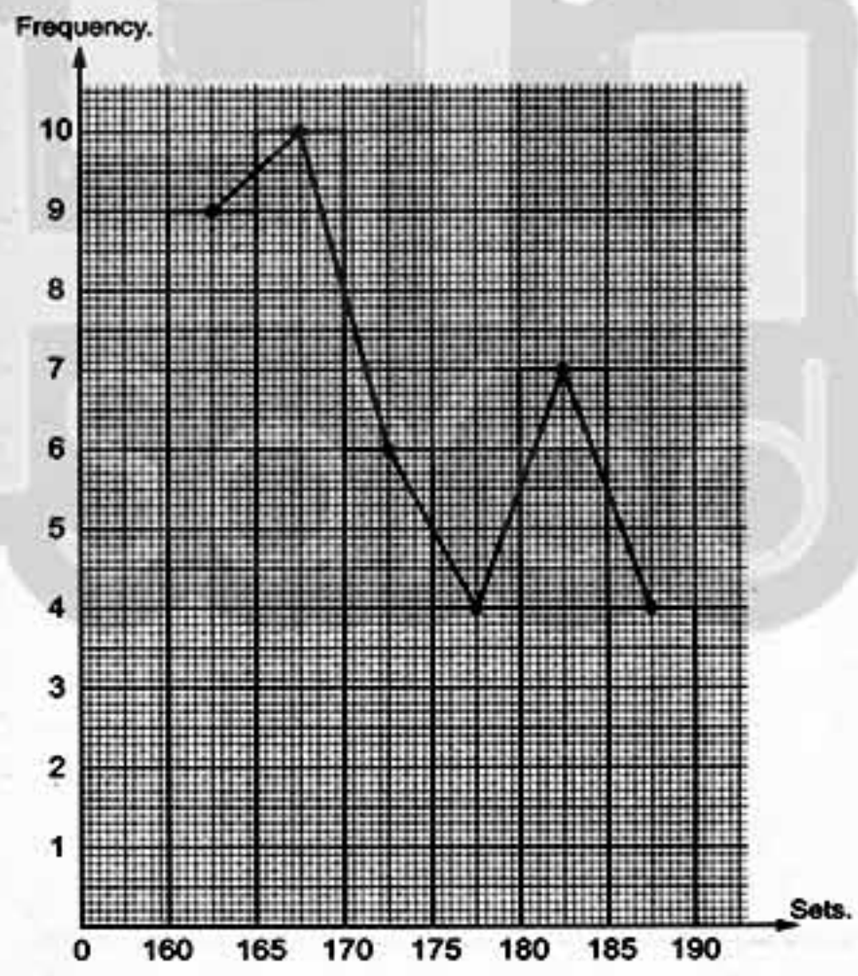
(c)



10 (a)

Sets	160 –	165 –	170 –	175 –	180 –	185 –
Frequency	9	10	6	4	7	4

(b)

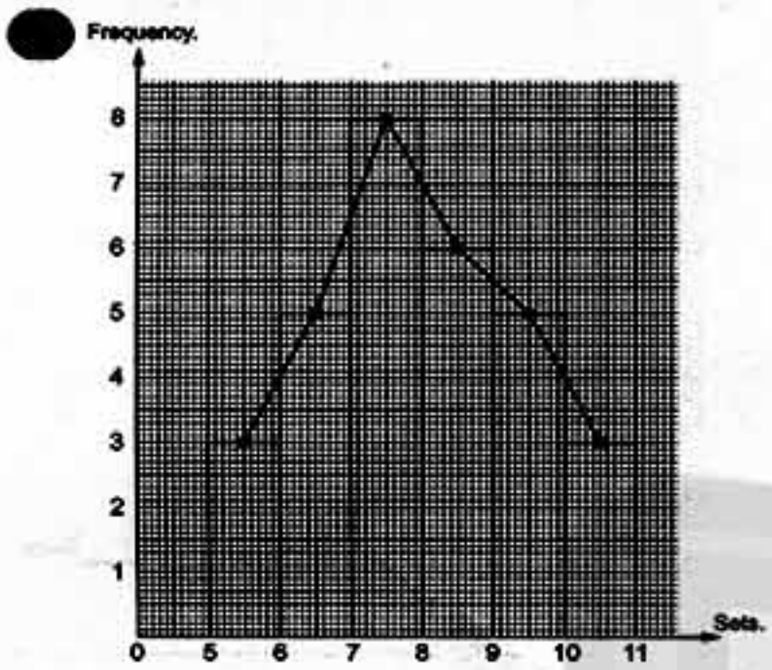


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Unit five

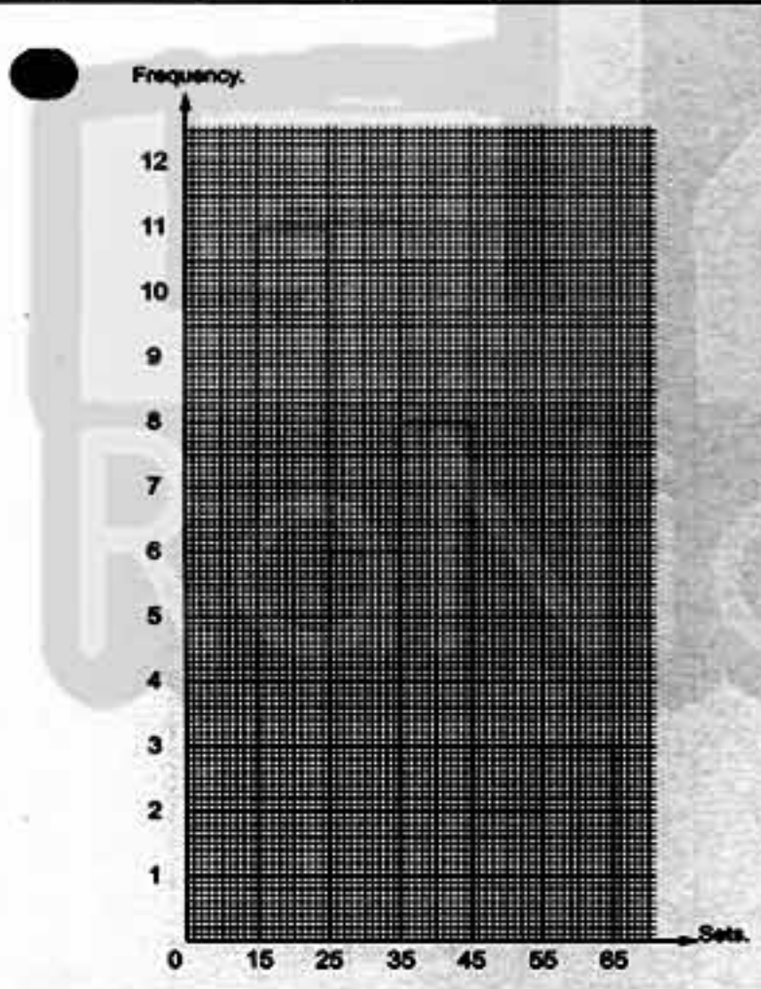
11

Sets	5 –	6 –	7 –	8 –	9 –	10 –
Frequency	3	5	8	6	5	3



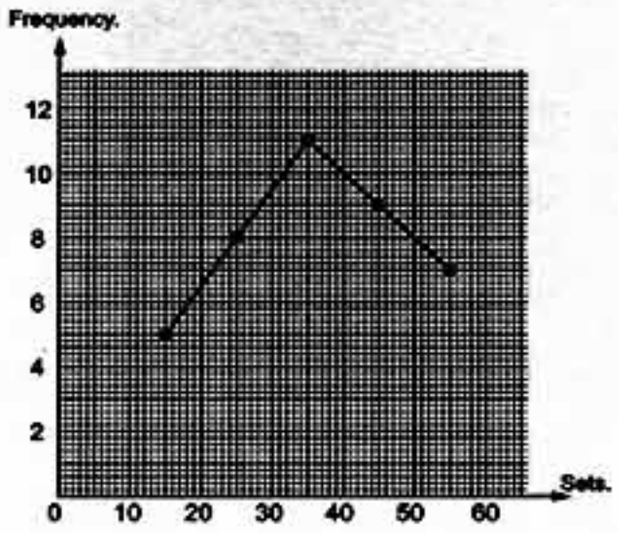
12

Sets	15 –	25 –	35 –	45 –	55 –
Frequency	11	6	8	2	3



13 $x = 30 -$

, $y = 7$



Answers of exercise 10

1 Clothes = $\frac{200}{1600} = \frac{1}{8}$

Food = $\frac{800}{1600} = \frac{1}{2}$

Transportation and medicine = $\frac{400}{1600} = \frac{1}{4}$

Renting = $\frac{200}{1600} = \frac{1}{8}$



2 Sports = $\frac{10}{40} = \frac{1}{4}$

News = $\frac{5}{40} = \frac{1}{8}$

Series = $\frac{5}{40} = \frac{1}{8}$

Movies = $\frac{20}{40} = \frac{1}{2}$

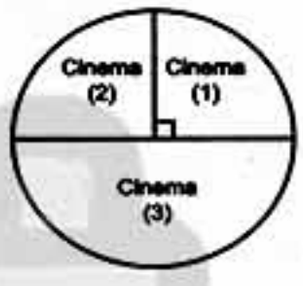


3 Cinema (1) = $\frac{150}{600} = \frac{1}{4}$

Cinema (2) = $\frac{150}{600} = \frac{1}{4}$

Cinema (3) = $\frac{300}{600} = \frac{1}{2}$

$\frac{1}{4}$



4 Football = $\frac{20}{40} = \frac{1}{2}$

Basketball = $\frac{10}{40} = \frac{1}{4}$

Volleyball = $\frac{10}{40} = \frac{1}{4}$



5 30

Zoo = $\frac{60}{120} = \frac{1}{2}$

Bird park = $\frac{15}{120} = \frac{1}{8}$

Science centre = $\frac{15}{120} = \frac{1}{8}$

Alexandria library = $\frac{30}{120} = \frac{1}{4}$

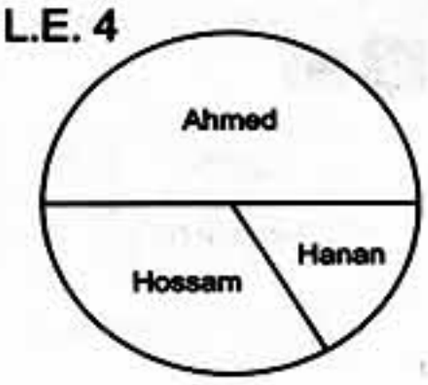


6 The rest = 24 – (12 + 8) = L.E. 4

Ahmed = $\frac{12}{24} = \frac{1}{2}$

Hossam = $\frac{8}{24} = \frac{1}{3}$

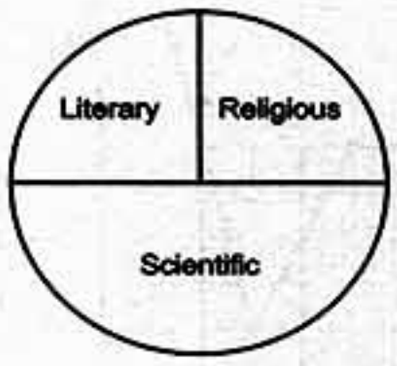
Hanan = $\frac{4}{24} = \frac{1}{6}$



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7 The number of succeded pupils
$= 100 \times \frac{3}{4} = 75$ pupils.

8



The number of religious books $= 800 \times \frac{1}{4}$
$= 200$ books.
The number of literary books $= 800 \times \frac{1}{4}$
$= 200$ books.
The number of scientific books $= 800 \times \frac{1}{2}$
$= 400$ books.

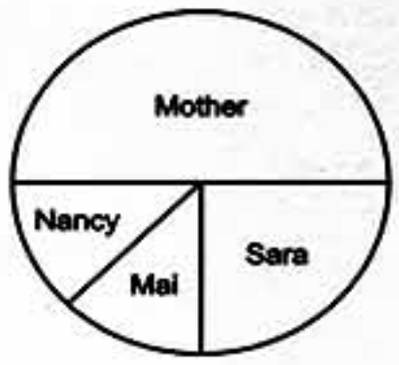
9 ●



● The number of students who watch sports programs $= 48 \times \frac{1}{2} = 24$ students.
The number of students who watch cultural programs $= 48 \times \frac{1}{4} = 12$ students.
The number of students who watch movies $= 48 \times \frac{1}{8} = 6$ students.
The number of students who watch news $= 48 \times \frac{1}{8} = 6$ students.

10 ● $\frac{1}{8}$

●



● What mai received $= 900 \times \frac{1}{8} =$ L.E. 112.5
What Ahmed's mother received $= 900 \times \frac{1}{2}$
$=$ L.E. 450

Answers of exercise 11

1 ● 15 cars ● 52 cars

2 ● 350 pounds ● 100 pounds ● 250 pounds

3 ● 80 visitors ● Thursday ● Monday ● Sunday and Tuesday

4 The number of babies in 2003 = 125 babies.
The number of babies in 2007 = 250 babies.
The difference = 250 – 125 = 125 babies.

5 ● blue ● 6 ● 3

6 The number of female $= \frac{3}{4} \times 220 = 165$

7 ● May ● May ● January , February and March

8 ● The fifth ● The fourth ● The second and third ● The all five days.

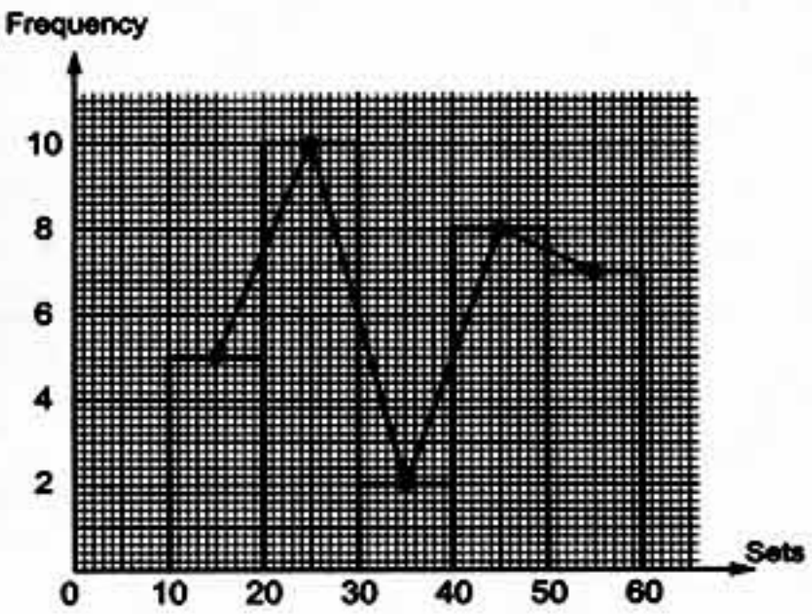
9 ● Football , tennis and jogging ● Bowling

Answers of general exercise on unit Five

1 ●

Sets	10 –	20 –	30 –	40 –	50 –
Frequency	5	10	2	8	7

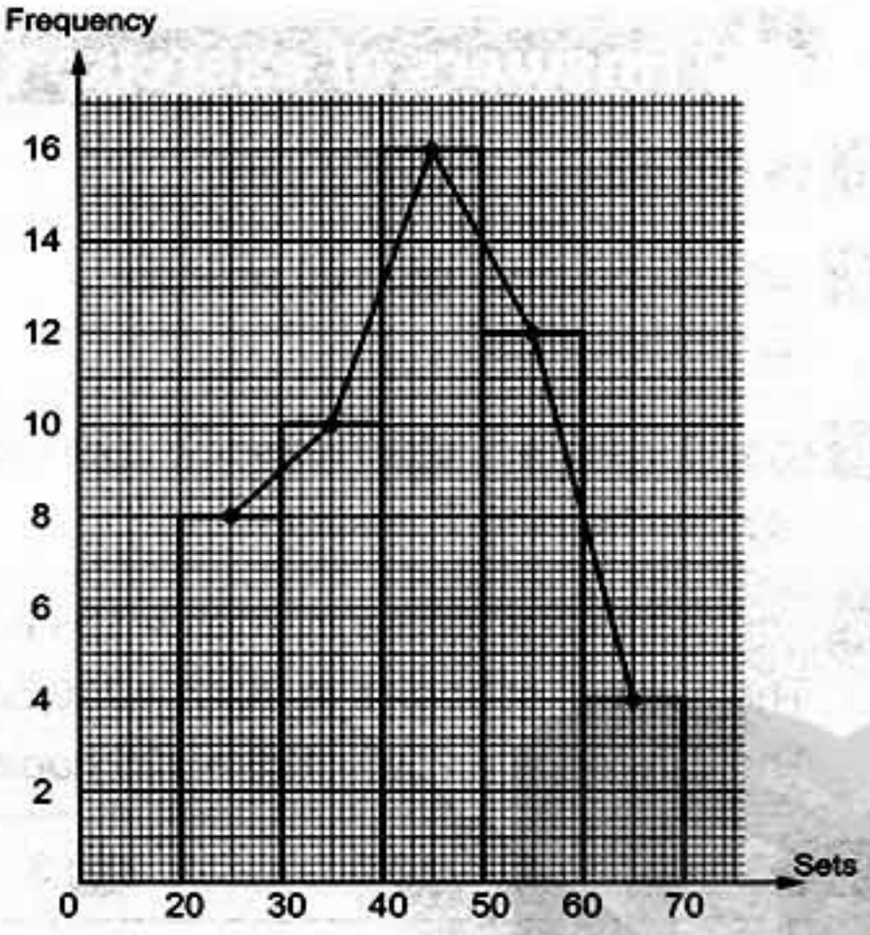
● Number of pupils get less than 30 marks
$= 5 + 10 = 15$ pupils.

● 

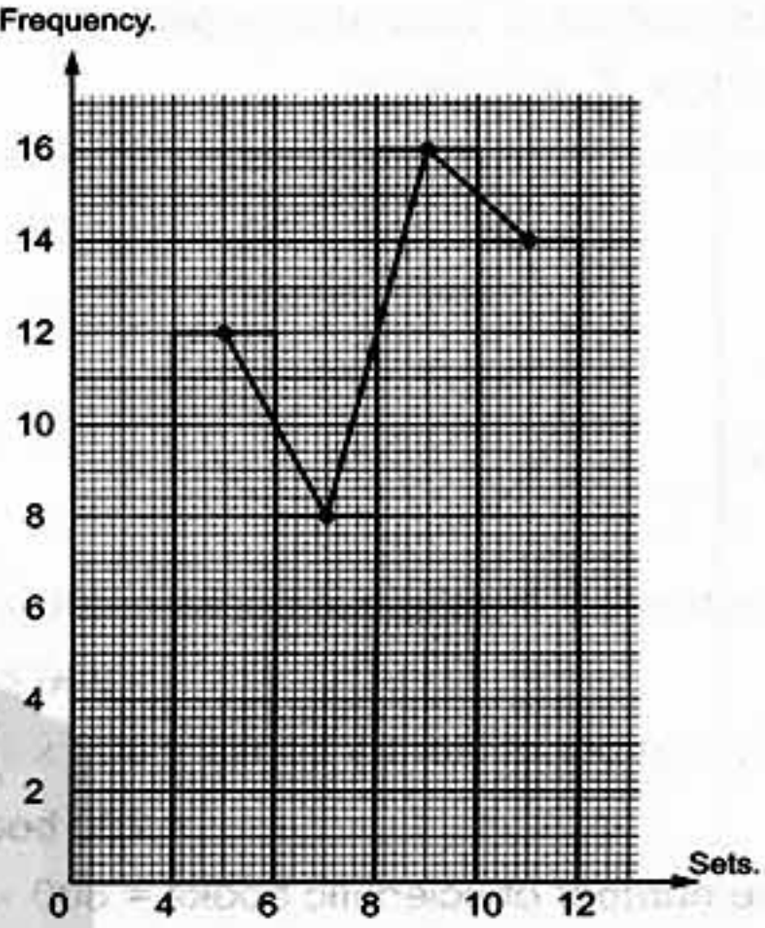
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Unit five

2



3

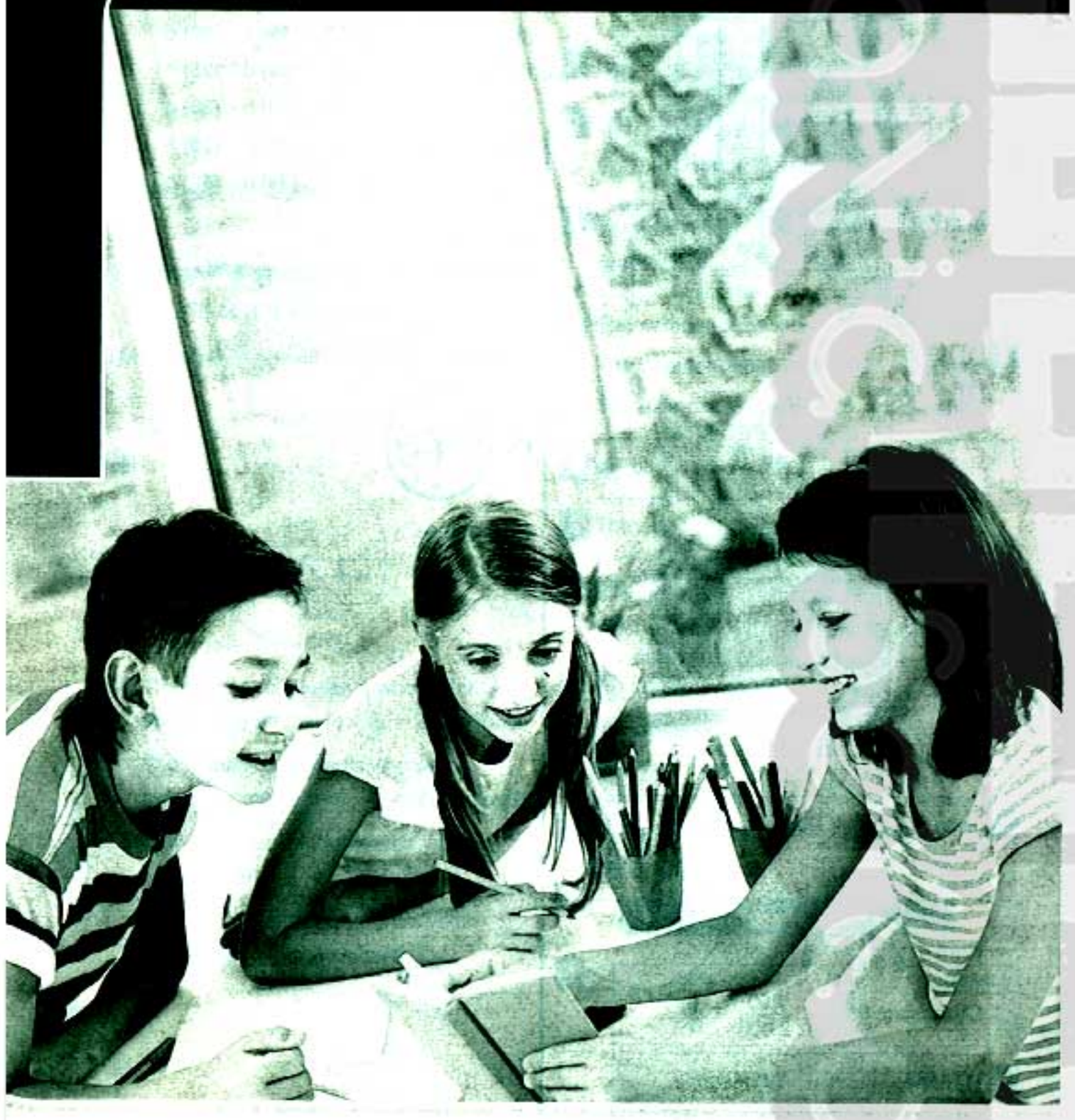


RaNia SaYed

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Guide Answers of the Worksheets



First Worksheets on unit 1 and unit 2

Sheet 1

1 4 , 7 , 0 , 1

2 (a) ⊄ (b) ∈ (c) ∉
(d) ⊂ (e) ⊂

3 (a) {0} (b) {3 , 5} (c) E
(d) ∅ (e) ℕ

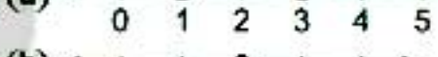
4 (a) × (b) × (c) ✓
(d) ✓ (e) ✓

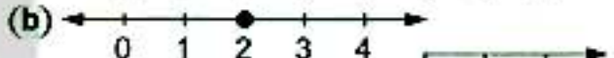
5 (a) {0} (b) {2} (c) ∈
(d) 1 (e) ∈

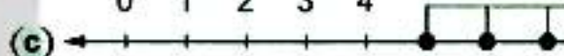
Sheet 2

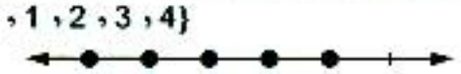
1 (a) {1 , 2 , 4 , 7}
(b) {1 , 3 , 5 , 7 , 9 , ...}
(c) {3}
(d) {2 , 3 , 4 , 5 , 6}

2 (a)


(b)


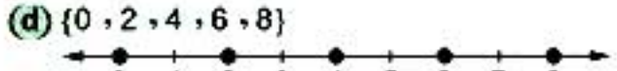
(c)


(d)


3 (a) {0 , 1 , 2 , 3 , 4}


(b) {4 , 5 , 6 , ...}

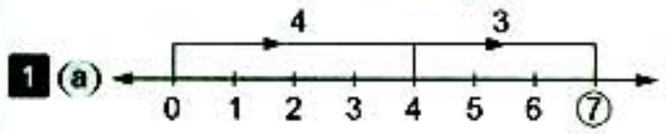

(c) {3 , 4 , 5 , 6}


(d) {0 , 2 , 4 , 6 , 8}


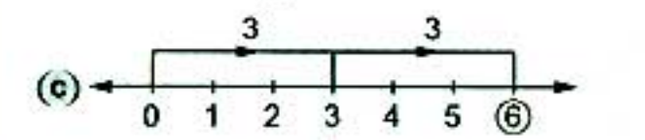
4 (a) 0 (b) 1 (c) {0 , 1 , 2 , 3 , 4 , 5 , 6}
(d) ℕ (e) ∅

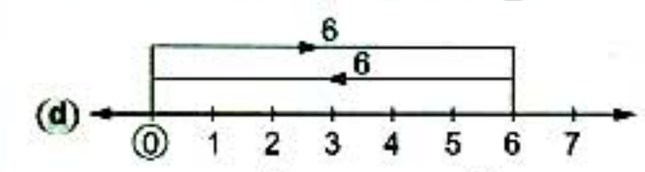
5 (a) ⊂ (b) ⊄ (c) ⊂
(d) ∉ (e) ∉

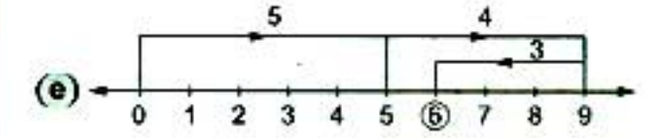
Sheet 3

1 (a)


(b)


(c)


(d)


(e)


2 (a) zero (b) associative
(c) commutative (d) ∈ (e) 0 , 0

3 (a) × (b) ✓ (c) × (d) × (e) ✓

4 (a) 46 + 17 + 64 = 46 + 64 + 17
= (46 + 64) + 17
= 110 + 17 = 127
(b) 71 + 82 + 29 + 18 = 71 + 29 + 82 + 18
= (71 + 29) + (82 + 18)
= 100 + 100 = 200
(c) 174 + 143 + 126 + 157
= 174 + 126 + 143 + 157
= (174 + 126) + (143 + 157)
= 300 + 300 = 600

5 (a) < (b) > (c) >

كتاب زاكرولى
موقع زاكرولى التعليمى
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الصف الخامس الابتدائى

Sheet 4

1 (a) $25 \times 12 \times 4 = 25 \times 4 \times 12$
$= (25 \times 4) \times 12$
$= 100 \times 12 = 1200$

(b) $135 \times 74 + 135 \times 26 = 135 \times (74 + 26)$
$= 135 \times 100 = 13500$

(c) $4 \times 8 \times 25 \times 125 = 4 \times 25 \times 8 \times 125$
$= (4 \times 25) \times (8 \times 125)$
$= 100 \times 1000 = 100\,000$

(d) $53 \times 99 = 53 \times (100 - 1)$
$= 53 \times 100 - 53 \times 1$
$= 5300 - 53 = 5\,247$

(e) $29 \times 101 = 29 \times (100 + 1)$
$= 29 \times 100 + 29 \times 1$
$= 2900 + 29 = 2929$

2 (a) possible (b) possible (c) impossible
(d) possible (e) impossible

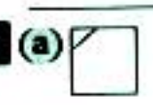
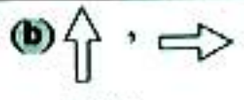
3 (a) 1 (b) 20 (c) associative
(d) 10 (e) {0 , 1 , 2 , 3 , 4}

4 (a) ∈ (b) $8 \times 50 + 8 \times 4$
(c) 6 (d) even (e) 0

5 (a) $x \times y + y \times z = 3 \times 2 + 2 \times 5$
$= 6 + 10 = 16$
(b) $(x - y) \times z = (3 - 2) \times 5 = 1 \times 5 = 5$
(c) $(z + x) \times y = (5 + 3) \times 2 = 8 \times 2 = 16$
(d) $2 \times x + 4 \times y - z = 2 \times 3 + 4 \times 2 - 5 = 9$

Sheet 5

1 (a) 2 222 , 22 222 , 222 222
(b) 16 , 32 , 64 (c) 15 , 21 , 28
(d) 24 , 29 , 34 (e) 16 , 25 , 36

2 (a)  (b) 
(c)  (d) 
(e) 

3 (a) 55 (b) 127

4 (a) $43 + 55 + 57 + 45$
$= 43 + 57 + 55 + 45$
$= (43 + 57) + (55 + 45)$
$= 100 + 100 = 200$

(b) $4 \times 16 \times 25 = 4 \times 25 \times 16$
$= (4 \times 25) \times 16$
$= 100 \times 16 = 1600$

(c) $18 \times 69 + 18 \times 31 = 18 \times (69 + 31)$
$= 18 \times 100 = 1800$

(d) $65 \times 102 = 65 \times (100 + 2)$
$= 65 \times 100 + 65 \times 2$
$= 6500 + 130 = 6630$

5 (a) × (b) ✓ (c) ✓ (d) ✓ (e) ×

Sheet 6

1 (a) A + 3 (b) B − 2
(c) 7 C (d) M + 5

2 (a) $x + 6$ (b) 3 y (c) m − 4
(d) n + 2 (e) 2 d + 8

3 (a) 5 k (b) ∉ (c) 256
(d) 72 (e) $x + 3$

4 (a) 3 is added to the number m
(b) Six times the number n
(c) l is subtracted from 7
(d) The number k is divided by 9
(e) 1 more than twice the number a
(f) 3 times the number h is decreased by 4

5 (a) (1) $25 \times 31 \times 4 = 25 \times 4 \times 31$
$= (25 \times 4) \times 31$
$= 100 \times 31 = 3100$

(2) $28 + 17 + 72 + 83 = 28 + 72 + 17 + 83$
$= (28 + 72) + (17 + 83)$
$= 100 + 100 = 200$

(b) (1) A = {0 , 1 , 2 , 3 , 4 , 5 , 6}



(2) B = {3 , 4 , 5 , 6 , 7 , 8}



Sheet 7

1 (a) $y = x + 7$ (b) $y = 2x$ (c) $y = x - 3$
(d) $x = y + 5$ (e) $x = 2 (y - 4)$

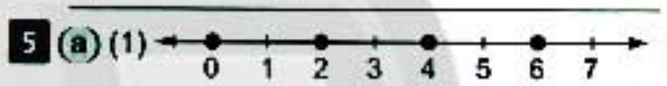
2 $y = 75 x$

3

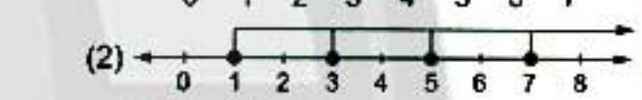
x	3	1	0	2	5
y	7	3	1	5	11

4 (a) 1 (b) 3 m + 7 (c) 100 , 3500
(d) 24 , 39 (e) 20 − x

5 (a) (1)



(2)



(b) (1) $\frac{x + y}{z} = \frac{2 + 3}{5} = \frac{5}{5} = 1$

(2) $3 \times z + x - y = 3 \times 5 + 2 - 3$
$= 15 + 2 - 3 = 14$

Sheet 8

1 (a) $x + 3 = 7$ $x = 7 - 3$ $x = 4$
(b) $f - 6 = 6$ $f = 6 + 6$ $f = 12$
(c) $3 a = 21$ $a = 21 + 3$ $a = 7$
(d) $k + 4 = 2$ $k = 2 \times 4$ $k = 8$
(e) $5 x + 3 = 13$ $5 x = 13 - 3$ $5 x = 10$
$x = 10 \div 5$ $x = 2$
(f) 25 − 6 = 19 , then m = 6

2 (a) $x + 7 = 12$ (b) t − 9 = 1 (c) $3 k = 12$
(d) n − 5 = 6 (e) N + 5 = 4

3 (a) let the number be x
then , $x + 5 = 8$ $x = 8 - 5$ $x = 3$
the number is : 3

(b) 7 m = 56 m = 56 ÷ 7 m = 8

4 (a) 8 (b) 0 (c) 47
(d) 4 t (e) 2

5 (a) $2 x + 7 = 17$ $2 x = 17 - 7$ $2 x = 10$
$x = 10 \div 2$ $x = 5$

(b) (1) $672 + 299 + 328 + 701$
$= 672 + 328 + 299 + 701$
$= (672 + 328) + (299 + 701)$
$= 1000 + 1000 = 2000$

(2) $25 \times 917 \times 4 = 25 \times 4 \times 917$
$= (25 \times 4) \times 917$
$= 100 \times 917 = 91700$

Second Worksheets on unit 3 , unit 4 and unit 5

Sheet 1

1 (a) 36 cm² (b) 63 cm² (c) 80.5 cm²

2 (a) 512 cm² (b) 24 cm.

3 (a) The side length of the triangle
= 30 ÷ 3 = 10 cm.
The area = $\frac{1}{2} \times 10 \times 8.66 = 43.3$ cm²
(b) The area of the land = $\frac{1}{2} \times 12 \times 9 = 54$ m²
The area of the garden = 8 × 8 = 64 m²
The area of the garden is larger.

4 (1) The area = $\frac{1}{2} \times 6 \times 8 = 24$ cm²
(2) The length of $\overline{AD}$ = (24 × 2) + 10
= 48 cm.

5 The side length of the square = 60 ÷ 4
= 15 cm.
The area of the square = 15 × 15
= 225 cm²
The area of triangle = $\frac{1}{2} \times 20 \times 15$
= 150 cm²
The area of the figure ABED
= 225 + 150 = 375 cm²

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الفصل الدراسى الثانى

Sheet 2

1 (a) 40 cm^2 (b) 180 cm^2 (c) 24 cm^2

2 (a) The height = 28 ÷ 4 = 7 cm.

(b) The smallest height = 180 ÷ 60 = 3 cm.

3 The area of the square = 7 × 7 = 49 cm^2.

The area of the parallelogram

= 9 × 5 = 45 cm^2.

The area of the square is greater.

4 (a) The area = $\frac{1}{2}$ × 10 × 9 = 45 cm^2.

(b) The area of the parallelogram

ABCD = 8 × 15 = 120 cm^2.

The length of $\overline{DE}$ = $\frac{120}{10}$ = 12 cm.

5 (1) 14 (2) 7 (3) 84

(4) 21 (5) 63

Sheet 3

1 (a) 36 cm^2 (b) 20.25 cm^2

(c) 32 cm^2 (d) 50 cm^2

2 (a) 20 cm. (b) 25 cm^2

3 The area of the square = 7 × 7 = 49 cm^2.

The area of the triangle = $\frac{1}{2}$ × 4 × 3 = 6 cm^2.

The area of the shaded part = 49 – 6

= 43 cm^2.

4 (a) The height = 48 ÷ 8 = 6 cm.

(b) The area = $\frac{1}{2}$ × 6 × 4 = 12 cm^2.

5 The area of rectangle = 12 × 8 = 96 cm^2.

The area of the square = $\frac{1}{2}$ × 8 × 8 = 32 cm^2.

The area of shaded part = 96 – 32 = 64 cm^2.

Sheet 4

1 (a) 24 cm^2 (b) 240 cm^2 (c) 56 cm^2

2 (a) The area of the rhombus = $\frac{1}{2}$ × 12 × 9

= 54 cm^2.

(b) The area of the square = $\frac{1}{2}$ × 10 × 10

= 50 cm^2.

The area of the rhombus = $\frac{1}{2}$ × 12 × 8

= 48 cm^2.

The area of the square is greater.

3 The area of the rhombus

= 10 × 9.6 = 96 cm^2.

The length of the other diagonal

= $\frac{2 \times 96}{12}$ = 16 cm.

4 (a) The area = 5 × 12 = 60 cm^2.

(b) The area = $\frac{1}{2}$ × 6 × 8 = 24 cm^2.

5 The area of rhombus = $\frac{1}{2}$ × 8 × 6 = 24 cm^2.

The area of parallelogram = 10 × 5 = 50 cm^2.

The difference = 50 – 24 = 26 cm^2.

Sheet 5

1 (a) 31.4 cm. (b) 88 cm. (c) 44 cm.

(d) 37.68 m. (e) 66 cm.

2 The circumference of the circle

= 2 × 3.2 × 3.14 = 20.096 cm.

The perimeter of the square = 3.5 × 4 = 14 cm.

The circumference of the circle is longer.

3 (a) 15.42 cm. (b) 297 cm.

4 (a) Diameter length = 66 ÷ $\frac{22}{7}$ = 21 cm.

(b) The perimeter = (6 × 3.14) + 10 + 10

= 18.84 + 20 = 38.84 cm.

5 (a) The area rhombus = $\frac{1}{2}$ × 6 × 8 = 24 cm^2.

The area of parallelogram = 5 × 10

= 50 cm^2.

The area of parallelogram is greater.

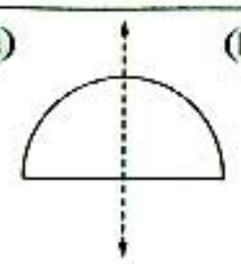
(b) The area = $\frac{1}{2}$ × 6 × 8 = 24 cm^2.

Sheet 6

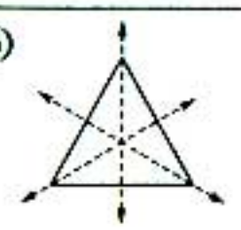
1 (a) translation (b) rotation

(c) reflection

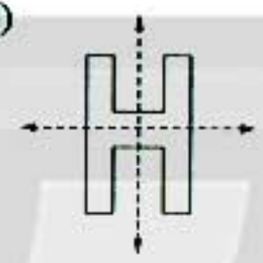
2 (a)



(b)



(c)



3 The perimeter = 70 + $\frac{1}{2}$ × $\frac{22}{7}$ × 70

= 180 cm.

4 (a) The area = $\frac{1}{2}$ × 6 × 6 = 18 cm^2.

(b) The height = 72 ÷ 9 = 8 cm.

5 The area of the rectangle = 10 × 8 = 80 cm^2.

The area of the triangle = $\frac{1}{2}$ × 6 × 8

= 24 cm^2.

The area of the shaded part = 80 – 24

= 56 cm^2.

Sheet 7

1 (a) 4 (b) b × h (c) translation (d) 80

2 (a) The area of triangle = $\frac{1}{2}$ × 12 × 8 = 48 cm^2.

The area of parallelogram = 10 × 5

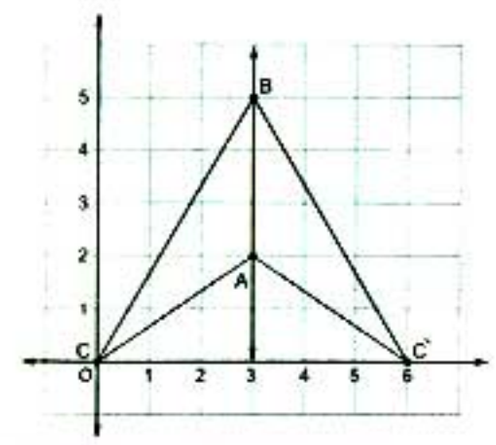
= 50 cm^2.

The area of parallelogram is greater.

(b) The circumference = $\frac{22}{7}$ × 14 = 44 cm.

3 (1) $\overleftrightarrow{EF}$ (2) $\overleftrightarrow{BF}$ (3) DBF

4



5 The area of the square = $\frac{1}{2}$ × 10 × 10 = 50 cm^2.

The area of the triangle = $\frac{1}{2}$ × 8 × 12 = 48 cm^2.

The area of the square is greater.

Sheet 8

1 (a) 2 π r (b) 132 (c) 6

(d) 5 (e) 2

2

Sets	Tally	Frequency
10 –	////	4
15 –	///	3
20 –	////	5
25 –	////	4

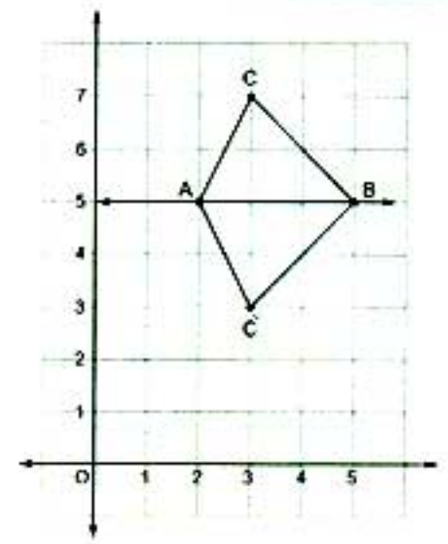
3 Area of the square = $\frac{1}{2}$ × 12 × 12

= 72 cm^2.

The length of the rectangle = 72 ÷ 8 = 9 cm.

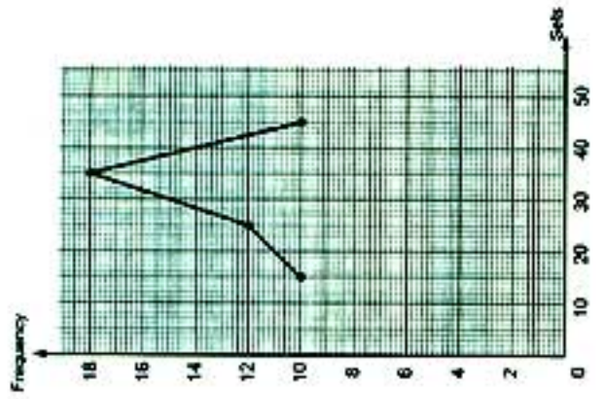
The perimeter = (9 + 8) × 2 = 34 cm.

4



Answers of the worksheets

5 (a)



(b) 28 students.

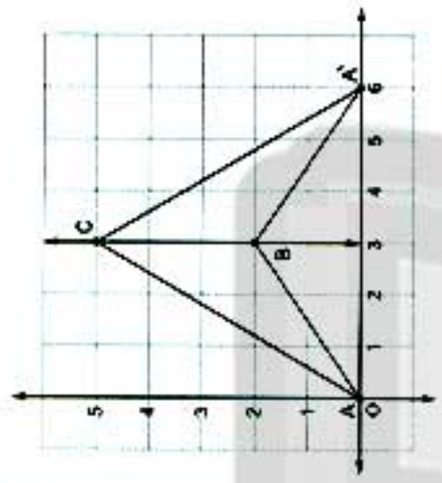
Sheet 11

1 (a) The circumference = $21 \times \frac{22}{7} = 66$ cm.

(b) The area = $\frac{1}{2} \times 8 \times 10 = 40$ cm^2.

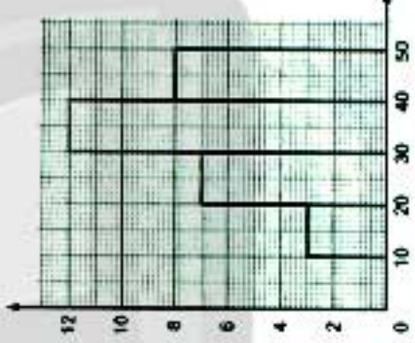
2 (a) The perimeter = $(6 \times 3.14) + 10 + 10$
$= 38.84$ cm.

(b)



3 (a) Football (b) Diving (c) 100
(d) 30 (e) Basketball

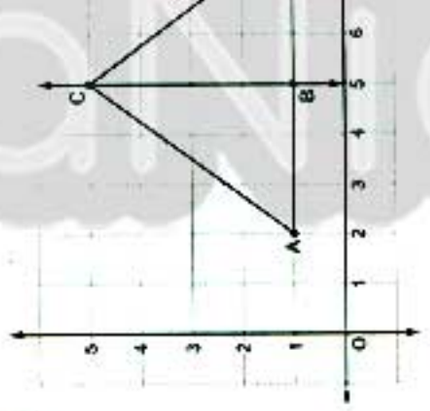
4



Sheet 10

1 (a) 4 (b) 15 (c) 44
(d) 100 (e) 5

2 (a)

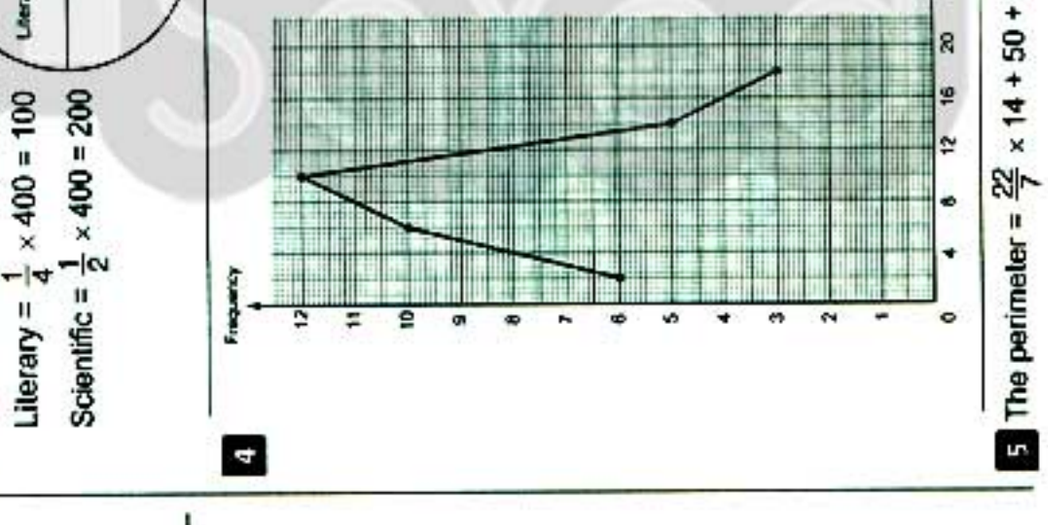


(b) $50 = \frac{1}{2} \times d \times d$ $d \times d = 50 + \frac{1}{2}$
$d \times d = 100$ $d \times d = 10 \times 10$
$d = 10$
The length of the diagonal = 10 cm.

3 Religious = $\frac{1}{4} \times 400 = 100$
Literary = $\frac{1}{4} \times 400 = 100$
Scientific = $\frac{1}{2} \times 400 = 200$



4



5 The perimeter = $\frac{22}{7} \times 14 + 50 + 50 = 144$ cm.

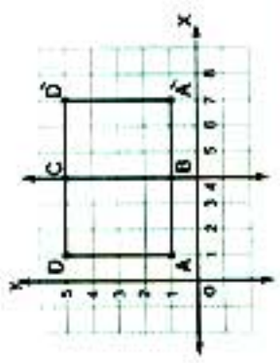
Sheet 9

5 The area of the triangle ABC = $\frac{1}{2} \times 6 \times 8 = 24$ cm.
The length of $\overline{BD} = \frac{24 \times 2}{10} = 4.8$ cm.

1 (a) $\frac{1}{2}$ base length x height (b) (3 , 5)
(c) 20 (d) 2 (e) π

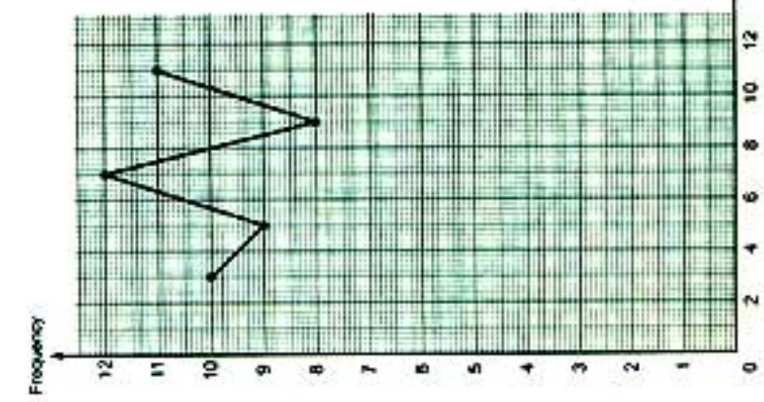
2 The perimeter = $\left(\frac{1}{2} \times 14 \times \frac{22}{7}\right) + 20 + 20$
$= 62$ cm.

3



4 The area of rhombus = $\frac{1}{2} \times 7 \times 9$
$= 31.5$ cm^2.
The area of parallelogram = 8×4
$= 32$ cm^2.
The area of parallelogram is greater.

5



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كتاب المعاصر

Answers of Model Examinations

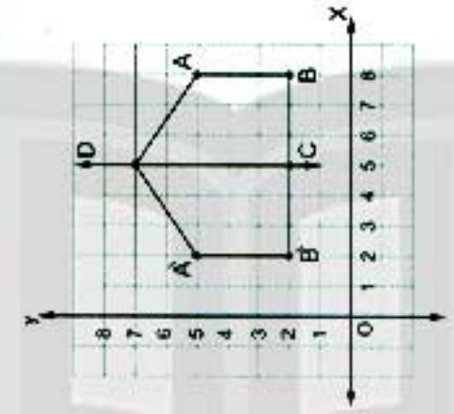
Model 1

1 (1) 22 (2) $2x-3$ (3) $\{3,2\}$ (4) $\in$
(5) 2 (6) 32 (7) odd (8) 1
(9) 1 (10) 5 (11) reflection
(12) $\{2\}$ (13) $4x$ (14) 8

2 (15) 19 , 26 (16) $35-x$ (17) 20
(18) 1 (19) 68 , 59 (20) 100

3 (21) $4 \times 25 \times 31 = (4 \times 25) \times 31$
$= 100 \times 31 = 3100$

(22)



(23) $3x + 5 = 17$ $3x = 17 - 5$ $3x = 12$
$x = \frac{12}{3}$ $x = 4$

(24) The length of the semicircle
$= \frac{1}{2} \times 7 \times \frac{22}{7} = 11$ cm.
The perimeter of the figure
$= 11 + 10 + 10 = 31$ cm.

(25) $(b - a)(b + a) = (4 - 3)(4 + 3) = 1 \times 7 = 7$

(26) [a] $x + 7$ [b] $x - 5$

(27) The area $= 14 \times 9 = 126$ cm^2.

(28) $x = 2y + 7$

(29) $156 + 871 + 344 + 129$
$= 156 + 344 + 871 + 129$
(commutative property)
$= (156 + 344) + (871 + 129)$
(associative property)
$= 500 + 1000 = 1500$

Model 2

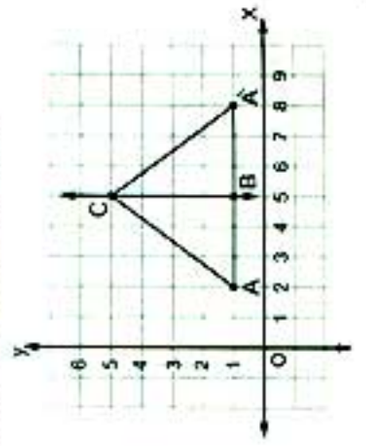
1 (1) 16 (2) $10-x$ (3) 2 (4) 36
(5) 6 (6) 81 (7) $\subset$ (8) 20
(9) 0 (10) 47 (11) $b \times h$ (12) 6
(13) $3x-2$ (14) $\in$

2 (15) (4 , 3) (16) reflection
(17) 5 (18) 28 (19) even (20) 1

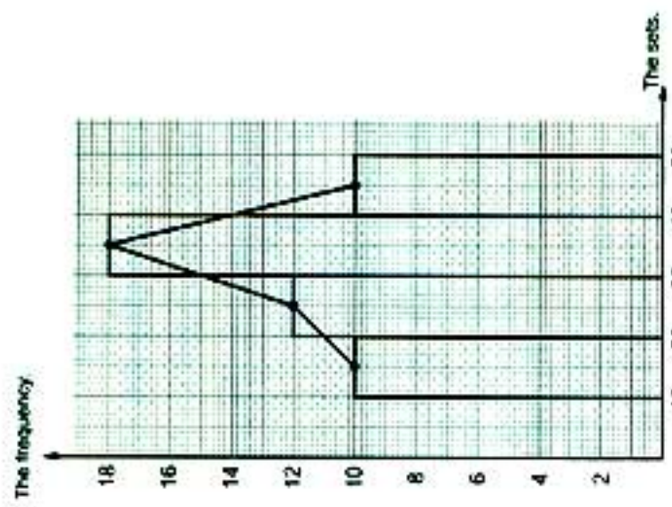
3 (21) [a] $2x - 5 = 3$ $2x = 3 + 5$
$2x = 8$ $x = \frac{8}{2}$ $x = 4$
[b] $a + 7 = 20$ $a = 20 - 7$ $a = 13$

(22) The area of square $= \frac{1}{2} \times 12 \times 12 = 72$ cm^2.
The area of rhombus $= \frac{1}{2} \times 15 \times 10 = 75$ cm^2.
The area of rhombus is greater.

(23)



(30)



Answers of the final examinations

model exam ration for the special needs students

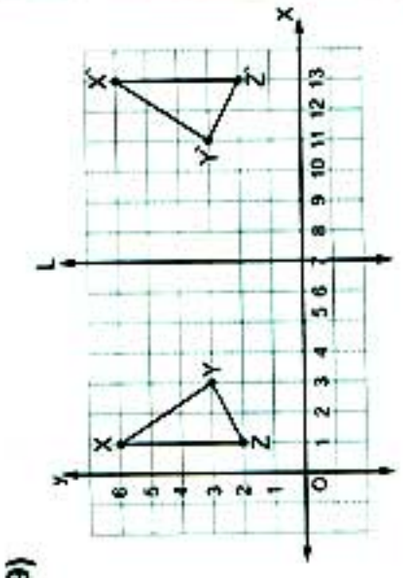
1 (1) 0 (2) 7 (3) $x+5$
(4) odd (5) $\subset$ (6) 16
(7) > (8) 18 (9) 24
(10) 220

2 (1) 24 (2) $4x$
(3) (6 , 2) (4) commutative

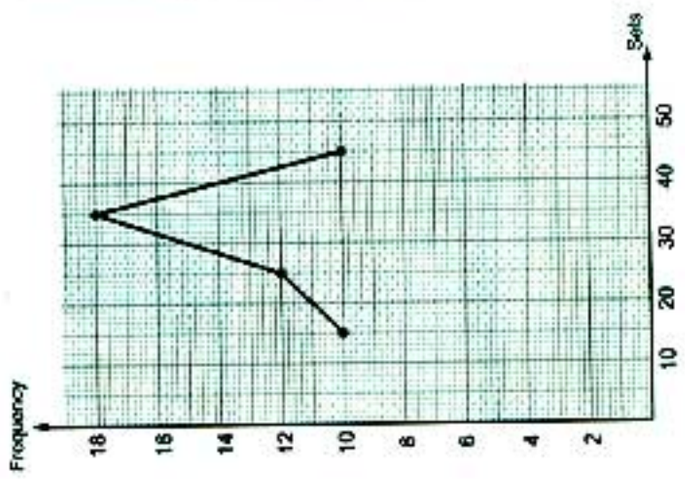
3 (1) 5 (2) $\in$ (3) diameter length
(4) 50 (5) 32

(28) $8 \times 117 \times 125 = 8 \times 125 \times 117$
$= (8 \times 125) \times 117$
$= 1000 \times 117 = 117\,000$

(29)



(30)



هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
الصف الخامس الابتدائى
موقع ذاكرولى التعليمى
كتاب المعاصر

كتاب اكسترا
هذا العمل خاص بموقع ذاكرولى التعليمى ولا يسمح بتداوله على مواقع أخرى
مجموعة كتب اكسترا

(24) $55 + 36 + 45 + 64$
$= 55 + 45 + 36 + 64$
$= (55 + 45) + (36 + 64)$
$= 100 + 100 = 200$

(25) The circumference of the circle
$= 21 \times \frac{22}{7} = 66$ m.
The perimeter of the figure
$= 66 + 50 + 50 = 166$ m.

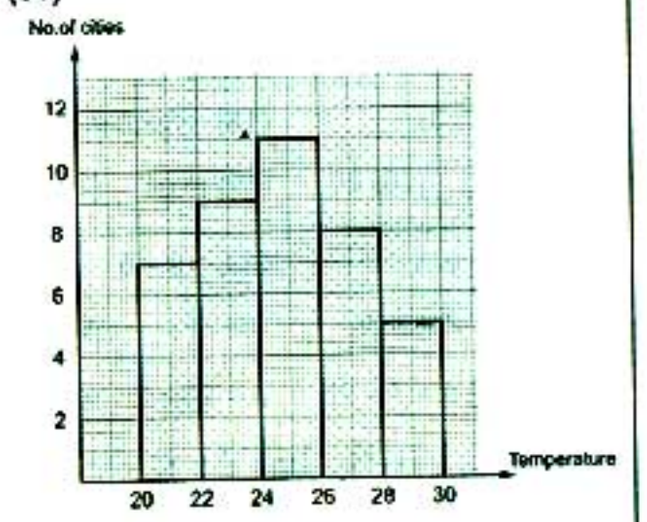
(26) $8 \times 47 \times 125$
$= 8 \times 125 \times 47 = (8 \times 125) \times 47$
$= 1000 \times 47 = 47000$

(27) $2 \times a + 5 \times b - c = 2 \times 3 + 5 \times 4 - 0$
$= 6 + 20 = 26$

(28) $37 \times 46 + 37 \times 54 = 37 \times (46 + 56)$
$= 37 \times 100 = 3700$

(29) [a] $X \cap Y = \{2 , 3\}$
[b] $X \cup Y = \{2 , 3 , 4 , 5 , 1 , 6\}$

(30)



Model 3

1 (1) 5 (2) $\varnothing$ (3) 35 (4) even
(5) 4 (6) 7 (7) 28 (8) $15 - 3x$
(9) 6 (10) 1 (11) 30 (12) (3 , 5)
(13) reflection (14) $10 - x$

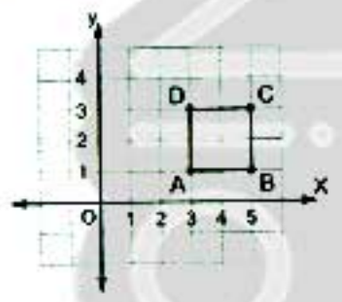
2 (15) 13 , 21 (16) commutative (17) 9
(18) 20 (19) identical (20) 4

3 (21) $5x - 2 = 8$ $5x = 8 + 2$ $5x = 10$
$x = \frac{10}{5}$ $x = 2$

(22) [a] $45 \times 27 - 45 \times 7 = 45 \times (27 - 7)$
$= 45 \times 20 = 900$

[b] $28 + 36 + 72 + 64$
$= 28 + 72 + 36 + 64$
$= (28 + 72) + (36 + 64)$
$= 100 + 100 = 200$

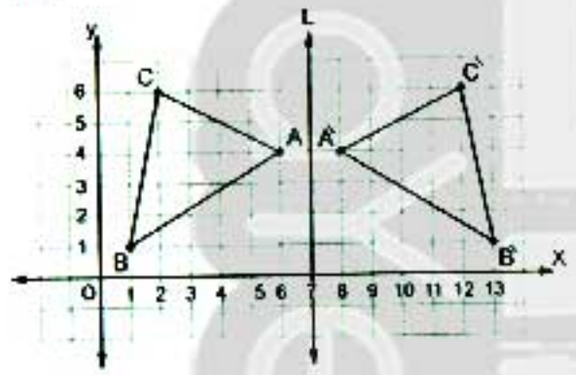
(23)



ABCD is a square
, the area $= 2 \times 2 = 4$ square units

(24) [a] $X \cap Y = \{4\}$
[b] $X \cup Y = \{1 , 2 , 3 , 4 , 5 , 6\}$
[c] $X - Y = \{1 , 2 , 3\}$

(25) [a] A (6 , 4) , B (1 , 1) , C (2 , 6)
[b]



(26) [a] The area $= 10 \times 12 = 120$ cm^2
[b] BC $= \frac{120}{8} = 15$ cm.

(27) The length of the semicircle
$= 35 \times \frac{22}{7} = 110$ cm.
The perimeter of the figure
$= 110 + 70 = 180$ cm.

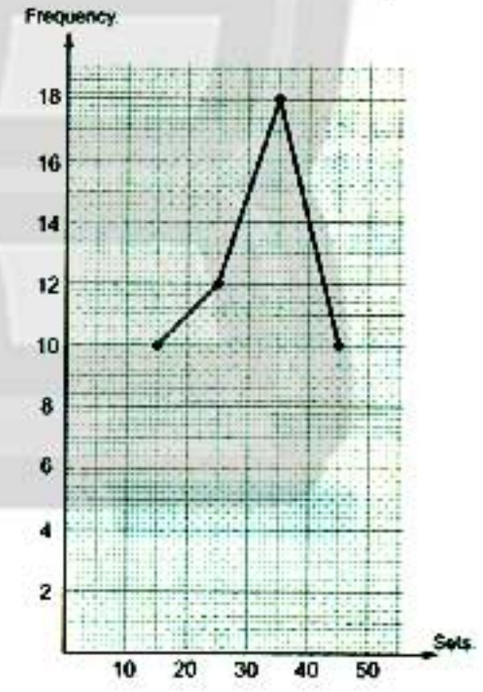
(28)



Clothes $= \frac{200}{1600} = \frac{1}{8}$
Food $= \frac{800}{1600} = \frac{1}{2}$
Transportation and medicine $= \frac{400}{1600} = \frac{1}{4}$
Renting $= \frac{200}{1600} = \frac{1}{8}$

(29) The area of square $= \frac{1}{2} \times 10 \times 10 = 50$ cm^2
The area of the rhombus is greater.

(30)



Model 4

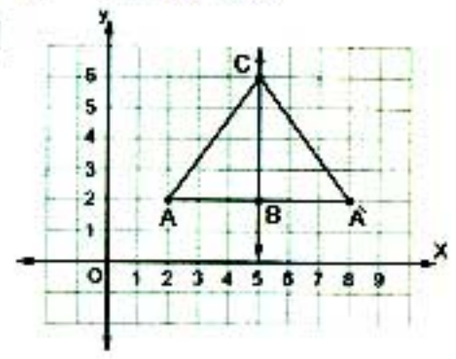
1 (1) 95 (2) {0 , 1 , 2} (3) 2
(4) 10 (5) 53 (6) 5 (7) 1
(8) $2x - 5$ (9) 24 (10) $\notin$ (11) even
(12) 2 (13) 20 (14) 6

2 (15) base length × corresponding height
(16) associative (17) $\varnothing$
(18) 3 (19) {2 , 3 , 5 , 7 , 11 , 13}
(20) 64

3 (21) The perimeter $= 5 + 5 + 10 + 5 + 10$
$= 35$ cm.

(22) [a] AB $= 3$ length units.
BC $= 4$ length units.

[b]



(23) [a] $872 + 199 + 128 + 801$
$= 872 + 128 + 199 + 801$
$= (872 + 128) + (199 + 801)$
$= 1000 + 1000 = 2000$

[b] $56 \times 101 = 56 \times (100 + 1)$
$= 56 \times 100 + 56 \times 1 = 5600 + 56 = 5656$

(24) [a] $2x + 9 = 21$ $2x = 21 - 9$
$2x = 12$ $x = \frac{12}{2}$ $x = 6$
[b] $x - 5 = 2$ $x = 2 + 5$ $x = 7$

(25) $x = 2y + 9$

(26) The circumference of first circle
$= 10 \times 3.14 = 31.4$ cm.
The circumference of second circle
$= 15 \times 3.14 = 47.1$ cm.
The difference $= 47.1 - 31.4 = 15.7$ cm.

(27) The area of the land $= \frac{1}{2} \times 25 \times 25$
$= 312.5$ m^2
The area of the house $= 15 \times 15$
$= 225$ m^2
The area of the garden $= 312.5 - 225$
$= 87.5$ m^2

(28) $8 \times 43 \times 125 = 8 \times 125 \times 43$
$= (8 \times 125) \times 43 = 1000 \times 43 = 43000$

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Maths
الفصل الدراسى الثانى

2 (15) π (16) 4 (17) $\mathbb{N}$
(18) 12 (19) 164 (20) $3x$

3 (21) [a] $\overleftrightarrow{EF}$ [b] $\overline{BF}$ [c] DBF

(22) [a] $z + x - y = 7 + 2 - 1 = 9 - 1 = 8$

[b] $\frac{z-y}{x} = \frac{7-1}{2} = \frac{6}{2} = 3$

(23) $3x - 1 = 8$ $3x = 8 + 1$ $3x = 9$
$x = \frac{9}{3}$ $x = 3$

(24) [a] $4 \times 175 \times 25 = 4 \times 25 \times 175$
$= (4 \times 25) \times 175$
$= 100 \times 175 = 17\,500$

[b] $102 + 175 + 98 = 102 + 98 + 175$
$= (102 + 98) + 175$
$= 200 + 175 = 375$

(25) [a] The area $= 10 \times 12 = 120$ cm^2.

[b] BC $= \frac{120}{8} = 15$ cm.

(26) $215 \times 101 = 215 \times (100 + 1)$
$= 215 \times 100 + 215 \times 1$
$= 21\,500 - 215 = 21\,285$

(27) The length of the semicircle
$= \frac{1}{2} \times 14 \times \frac{22}{7} = 22$ cm.
The perimeter of the figure
$= 22 + 14 = 36$ cm.

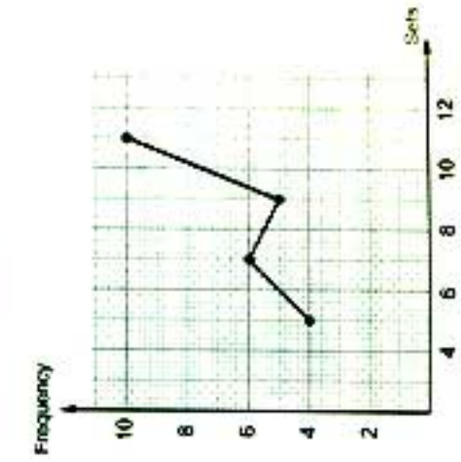
(28) [a] $X \cap Y = \{4\}$

[b] $X \cup Y = \{1, 2, 3, 4, 5, 6\}$

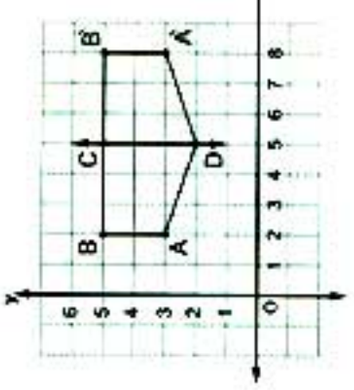
[c] $X - Y = \{1, 2, 3\}$

(29) $x + 3 = 12$ $x = 12 - 3$ $x = 9$

(30)



(22)



(23) $72 + 89 + 28 + 11$
$= 72 + 28 + 89 + 11$
$= (72 + 28) + (89 + 11)$
$= 100 + 100 = 200$

(24) $\frac{1}{7}x - 2 = 3$ $\frac{1}{7}x = 3 + 2$
$\frac{1}{7}x = 5$ $x = 5 \times 7$ $x = 35$

(25) The area $= \frac{1}{2} \times 6 \times 9 = 27$ cm^2.

(26) $29 \times 999 = 29 \times (1\,000 - 1)$
$= 29 \times 1\,000 - 29 \times 1$
$= 29\,000 - 29 = 28\,971$

(27) [a] 250 students [b] 125 students

(28) $8 \times 69 \times 125 = 8 \times 125 \times 69$
$= (8 \times 125) = 1\,000 \times 69 = 69\,000$

(29) The perimeter $= L + L + 7 = (2L + 7)$ cm.

(30)



Model 7

1 (1) 2 (2) 7 (3) $y + 12$
(4) 36 (5) $\notin$ (6) 4
(7) 25 (8) $35 - A$ (9) 9
(10) translation (11) 0 (12) 20
(13) 100 (14) 9

[a] A (1 , 7) , B (5 , 7) , C (5 , 4) , D (1 , 4)

[b] Á (11 , 7) , B̀ (7 , 7) , C̀ (7 , 4) , D̀ (11 , 4)

(24) The side length of square $= 56 \div 4$
$= 14$ cm.

The length of the semicircle $= \frac{1}{2} \times 14 = 22$ cm.

The perimeter of the figure
$= 14 + 14 + 14 + 22 = 64$ cm.

(25) $18 \times 99 = 18 \times (100 - 1)$
$= 18 \times 100 - 18 \times 1$
$= 1800 - 18 = 1782$

(26) $2x + 3 = 23$ $2x = 23 - 3$
$2x = 20$ $x = \frac{20}{2}$ $x = 10$

(27) $2 \times 347 \times 5 = 2 \times 5 \times 347 = (2 \times 5) \times 347$
$= 10 \times 347 = 3470$

(28) $h = \frac{48}{8} = 6$ cm.

(29) [a] $x \times y + y \times z = 3 \times 2 + 2 \times 5$
$= 6 + 10 = 16$

[b] $(x - y) \times z = (3 - 2) \times 5 = 1 \times 5 = 5$

(30) [a] football [b] diving [c] 100 pupils

Model 6

1 (1) $x + 7$ (2) 4 (3) 2
(4) 14 (5) 6 (6) even
(7) $7x - 3$ (8) 48 (9) $\{4, 5\}$
(10) (4 , 2) (11) Equilateral (12) 85
(13) 30 (14) commutative

2 (15) reflection (16) 17 (17) $\varnothing$
(18) base length × corresponding height
(19) 100 , 4 500 (20) $4z + 9$

3 (21) The circumference of the circle
$= 14 \times \frac{22}{7} = 44$ m.
The distance around the figure
$= 44 + 24 + 24 = 92$ m.

(29) $x \times 3 + x \times 60 = 4 \times 63$
$x \times (3 + 60) = 4 \times 63$
$x \times 63 = 4 \times 63$ $x = 4$

(30)



Model 5

1 (1) 6 (2) $y + 5$ (3) 1
(4) translation (5) 5 (6) $\in$
(7) 18 (8) 0 (9) 7 (10) $2\pi r$
(11) 1 (12) $\subset$ (13) 6 (14) $\varnothing$

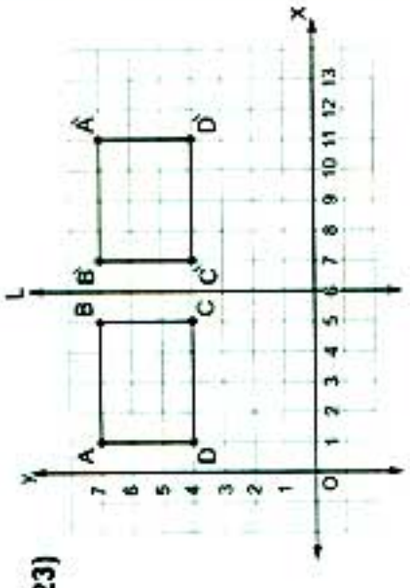
2 (15) 22 , 27 (16) 5 (17) 22 (18) $2x + 6$
(19) $\frac{1}{2}$ × base length × corresponding height
(20) C

3 (21) [a] The area of $\Delta ABC = \frac{1}{2} \times 6 \times 8 = 24$ cm^2.

[b] AD $= \frac{24 \times 2}{10} = 4.8$ cm.

(22) $71 + 82 + 29 + 18 = 71 + 29 + 82 + 18$
$= (71 + 29) + (28 + 18)$
$= 100 + 100 = 200$

(23)



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Maths

Model 8

1 (1) 36 (2) 500 (3) 32
(4) meaningless (5) {0 , 1 , 2}
(6) 5 (7) equilateral (8) a – 4
(9) 2 (10) 2 (11) (2 , 5)
(12) 7 (13) ∉ (14) reflection

2 (15) 24 (16) 1 (17) 100 , 4 700
(18) additive identity element (19) E (20) 2

3 (21) The area of the parallelogram
$= 10 \times 6 = 60\ cm^2$.
The area of the rhombus
$= \frac{1}{2} \times 12 \times 16 = 96\ cm^2$.
The area of the rhombus is greater.

(22) $5x - 7 = 33$ $5x = 33 + 7$ $5x = 40$
$x = \frac{40}{5}$ $x = 8$

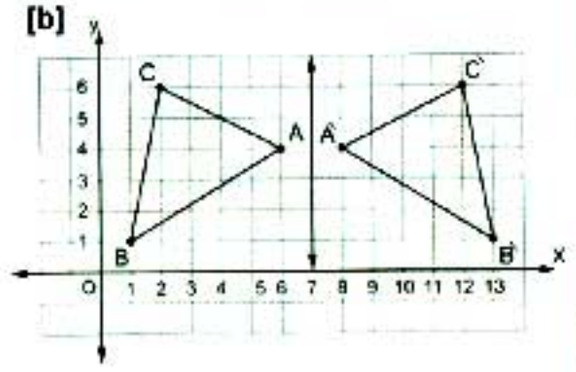
(23) The distance of one turn
$= 56 \times \frac{22}{7} = 176$ cm.
The number of turns
$= 35200 \div 176 = 200$ turns.

(24) CD = 828 ÷ 23 = 36 cm.
EC = 35 – 23 = 12 cm.
The area of Δ DCE
$= \frac{1}{2} \times 12 \times 36 = 216\ cm^2$.

(25) L.E. 800

(26) [a] A (6 , 4) , B (1 , 1) and C (2 , 6)

[b]



(27) [a] $137 \times 36 - 37 \times 36$
$= 36 \times (137 - 37)$
$= 36 \times 100 = 3\,600$

[b] 28 + 59 + 72 + 41
= 28 + 72 + 59 + 41
= (28 + 72) + (59 + 41)
= 100 + 100 = 200

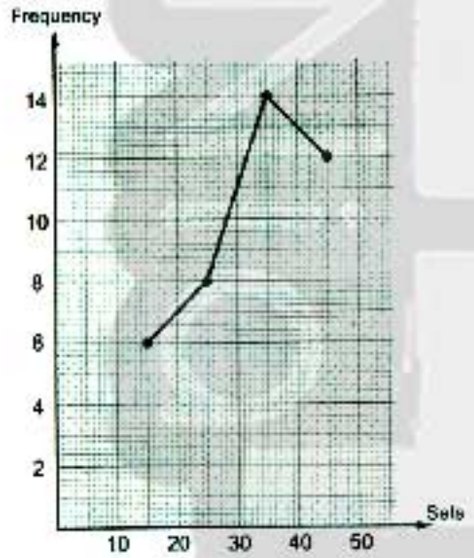
[c] $8 \times 81 \times 125 = 8 \times 125 \times 81$
$= (8 \times 125) \times 81 = 1\,000 \times 81 = 81\,000$

(28) The perimeter = 5 + 10 + 10 + 5 + 5
= 35 cm.

(29) $519 \times 99 = 519 \times (100 - 1)$
$= 519 \times 100 - 519 \times 1$
$= 51900 - 519 = 51381$

(30) [a] k = 8

[b]

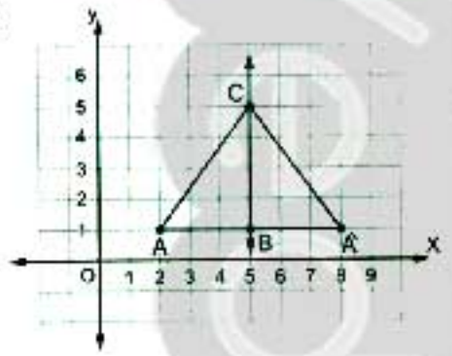


Model 9

1 (1) $7x - 4$ (2) 3 (3) 6
(4) odd (5) ⊂ (6) 4
(7) 32 (8) {5 , 6} (9) $20 - x$
(10) 22 (11) 28 (12) (3 , 5)
(13) 3L (14) ⊂

2 (15) 3 (16) 22 , 27 (17) 0
(18) 40 (19) height
(20) associative

3 (21)



(22) The numbers are : $x + 5$, $x + 7$, $x + 9$, $x + 11$ and $x + 13$

(23) The area of the square
$= \frac{1}{2} \times 12 \times 12 = 72\ cm^2$.
The area of the rectangle = $72\ cm^2$.
The length of the rectangle
$= 72 \div 8 = 9$ cm.
The perimeter of the rectangle
$= (9 + 8) \times 2 = 34$ cm.

(24) [a] $\frac{1}{6}x - 3 = 2$ $\frac{1}{6}x = 2 + 3$
$\frac{1}{6}x = 5$ $x = 5 \times 6$ $x = 30$

[b] $3x + 7 = 19$ $3x = 19 - 7$
$3x = 12$ $x = \frac{12}{3}$ $x = 4$

(25) The area = $\frac{1}{2} \times 20 \times 10 = 100\ cm^2$

(26) [a] 642 + 171 + 358 + 29
= 642 + 358 + 171 + 29
= (642 + 358) + (171 + 29)
= 1 000 + 200 = 1 200

[b] $25 \times 304 = 25 \times (300 + 4)$
$= 25 \times 300 + 25 \times 4$
$= 7\,500 + 100 = 7\,600$

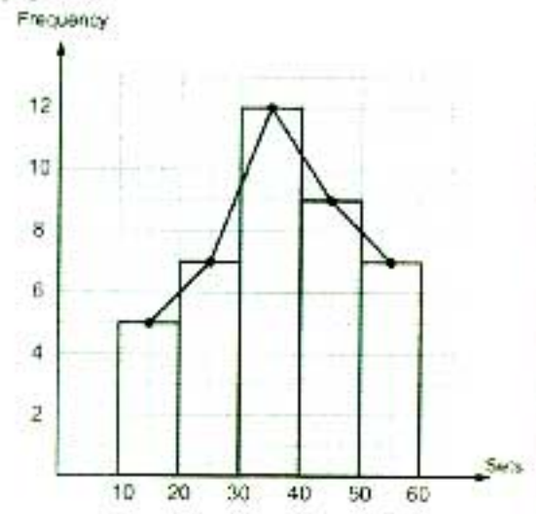
(27) $x = 2y + 7$

(28) The length of the semicircle
$= \frac{1}{2} \times 70 \times \frac{22}{7} = 110$ cm.
The perimeter of the window
= 110 + 70 + 70 + 70 = 320 cm.

(29) $18 \times 99 = 18 \times (100 - 1)$
$= 18 \times 100 - 18 \times 1 = 1800 - 18 = 1\,782$

(30) [a] A = 9

[b]



Model 10

1 (1) 28 (2) 7 (3) 2 a + 5
(4) 32 (5) 1 (6) 0
(7) translation (8) 4 (9) 6
(10) ∈ (11) 2 (12) 20
(13) a – 35 (14) {2 , 3}

2 (15) 81 (16) 13
(17) 425 , Commutative (18) 5
(19) odd (20) 5

3 (21) [a] 872 + 199 + 128 + 801
= 872 + 128 + 199 + 801
= (872 + 128) + (199 + 801)
= 1000 + 1000 = 2000

[b] $56 \times 1\,001 = 56 \times (1000 + 1)$
$= 56 \times 1000 + 56 \times 1$
$= 56000 + 56 = 56056$

(22) [a] $(x + 5)$ years

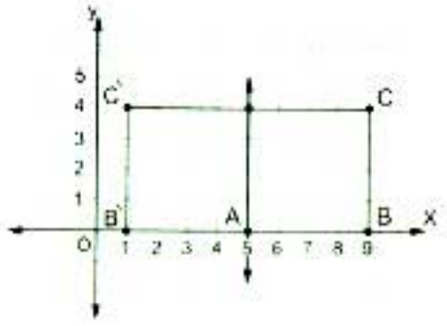
[b] $(x - 7)$ years

(23) The area of the rectangle
$= 8 \times 6 = 48\ cm^2$.
The area of the square = $4 \times 4 = 16\ cm^2$.
The area of the shaded part
$= 48 - 16 = 32\ cm^2$.

(24) [a] $2x - 3 = 11$ $2x = 11 + 3$ $2x = 14$
$x = \frac{14}{2}$ $x = 7$

[b] $\frac{1}{2}x + 8 = 10$ $\frac{1}{2}x = 10 - 8$
$\frac{1}{2}x = 2$ $x = 2 \times 2$ $x = 4$

(25)



(26) [a] $4 \times 31 \times 25 = 4 \times 25 \times 31$
$= (4 \times 25) \times 31$
$= 100 \times 31 = 3100$

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الصف الخامس الابتدائى
الفصل الدراسى الثانى

[b] $5 \times 95 = 5 \times (100 - 5)$

$= 5 \times 100 - 5 \times 5$

$= 500 - 25 = 475$

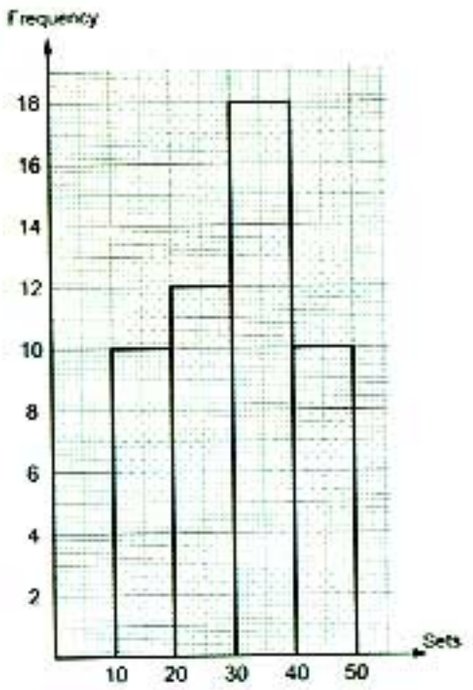
(27) The area $= 10 \times 8 = 80$ cm^2.

(28) [a] $a + c - b = 5 + 3 - 2 = 8 - 2 = 6$

[b] $\frac{a-c}{b} = \frac{5-3}{2} = \frac{2}{2} = 1$

(29) 36

(30)

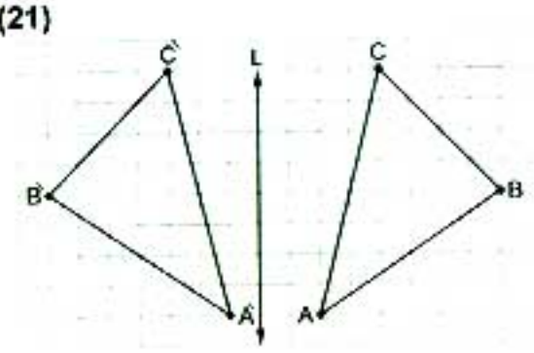


Model 11

1 (1) $2x - 5$ (2) 28 (3) $x + 15$
(4) 20 (5) 2 (6) $\in$
(7) $\in$ (8) 3 (9) 6
(10) 4L (11) $\notin$ (12) 4
(13) 15 (14) reflection

2 (15) C (16) circumference of the circle
(17) 68 , 59 (18) 4 (19) 1
(20) 6

3 (21)



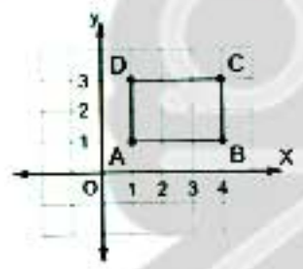
(22) $x - 2y = 9$

(23) $h = \frac{36}{4} = 9$ cm.

(24) [a] $x - 3 = 21$ $x = 21 + 3$ $x = 24$

[b] $3y = 27$ $y = \frac{27}{3}$ $y = 9$

(25) [a] 3 [b] rectangle



(26) [a] The length of the semicircle

$= \frac{1}{2} \times 70 \times \frac{22}{7} = 110$ cm.

The perimeter of the window

$= 110 + 70 + 70 + 70 = 320$ cm.

[b] The area of the square

$= 70 \times 70 = 4900$ cm^2.

The area of the window

$= 3850 + 4900 = 8750$ cm^2.

(27) $82 + 75 + 18 = 82 + 18 + 75$

$= (82 + 18) + 75 = 100 + 75$

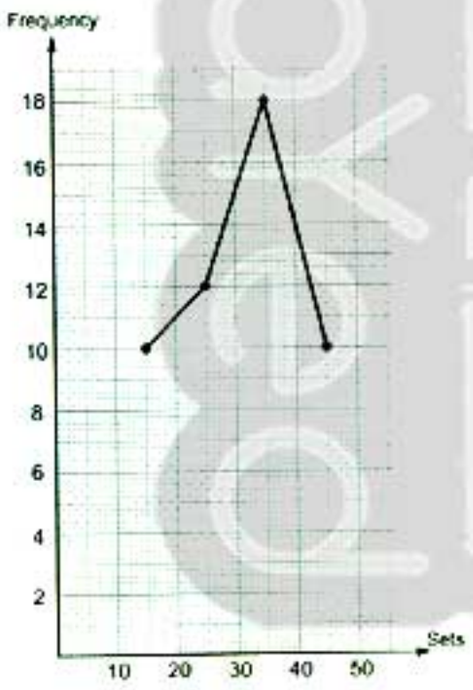
(28) $X = \{3 , 4 , 5 , 6 , 7 , 8\}$



(29) $163 \times 45 - 63 \times 45 = 45 \times (163 - 63)$

$= 45 \times 100 = 4500$

(30)



Model 12

1 (1) 2r (2) 9 (3) 60
(4) $\notin$ (5) $a - 5$ (6) (2 , 5)
(7) 4 (8) 15 (9) $25 - x$
(10) $\subset$ (11) 72 (12) rotation
(13) 50 (14) 7

2 (15) $x + 5$ (16) 32 (17) 13 , 21
(18) associative (19) 0
(20) $\{0 , 1 , 2 , 3\}$

3 (21) [a] $98 + 175 + 102 = 98 + 102 + 175$

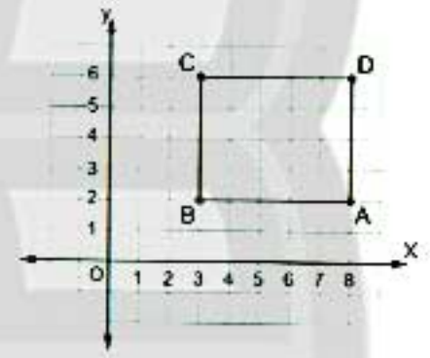
$= (98 + 102) + 175 = 200 + 175 = 375$

[b] $5 \times 312 \times 20 = 5 \times 20 \times 312$

$= (5 \times 20) \times 312$

$= 100 \times 312 = 31200$

(22)



[a] 5 , 4 [b] rectangle [c] 18

(23) [a] $3x + 8 = 29$ $3x = 29 - 8$ $3x = 21$

$x = \frac{21}{3}$ $x = 7$

[b] $\frac{1}{3}x + 8 = 10$ $\frac{1}{3}x = 10 - 8$ $\frac{1}{3}x = 2$

$x = 2 \times 3$ $x = 6$

(24) $AB = 60 \div 4 = 15$ cm.

The area of the square ABCD

$= 15 \times 15 = 225$ cm^2.

The area of the triangle DCE

$= \frac{1}{2} \times 20 \times 15 = 150$ cm^2.

The area of the figure ABED

$= 150 + 225 = 375$ cm^2.

(25) $14 - 3x = 8$

(26) [a] $111 \times 98 = 111 \times (100 - 2)$

$= 111 \times 100 - 111 \times 2$

$= 11100 - 222 = 10878$

[b] $315 \times 101 = 315 \times (100 + 1)$

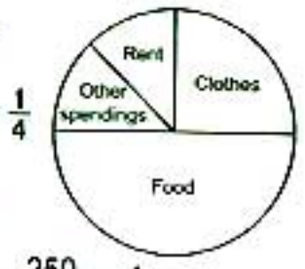
$= 315 \times 100 + 315 \times 1$

$= 31500 + 315 = 31815$

(27) Food $= \frac{1000}{2000} = \frac{1}{2}$

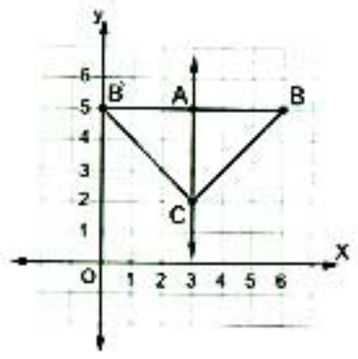
Clothes $= \frac{500}{2000} = \frac{1}{4}$

Rent $= \frac{250}{2000} = \frac{1}{8}$



Other spendings $= \frac{250}{2000} = \frac{1}{8}$

(28)



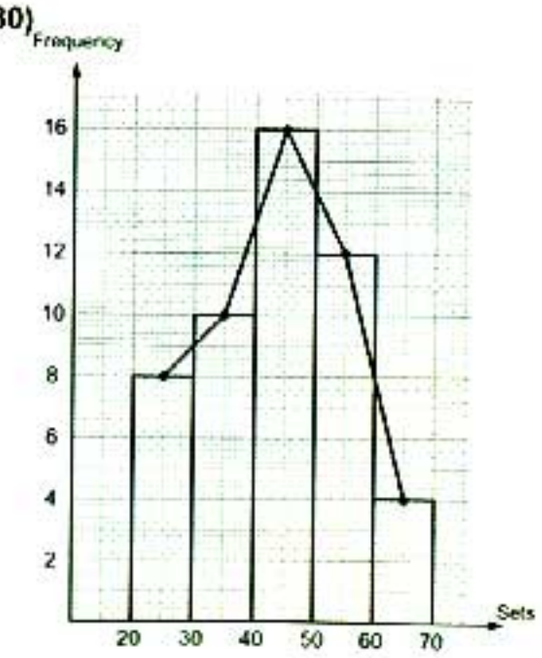
(29) The length of the semicircle

$= \frac{1}{2} \times 14 \times \frac{22}{7} = 22$ cm.

The perimeter of the figure

$= 22 + 18 + 18 = 58$ cm.

(30)



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المتفوق الخاص للإبتدائى

Model 13

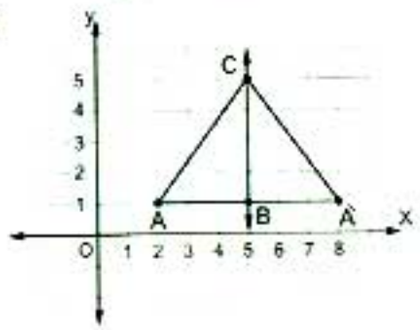
1 (1) 6 (2) 65 (3) 0
(4) 1 (5) ∅ (6) 4
(7) odd (8) 25 (9) >
(10) $2x + 8$ (11) 44 (12) even
(13) 4 (14) $\notin$

2 (15) 100 , 9100
(16) length of its diagonal × itself
(17) π (18) 3L (19) 20
(20) 32

3 (21) The area of rhombus = $\frac{1}{2} \times 8 \times 6 = 24$ cm^2
The area of parallelogram = $10 \times 5 = 50$ cm^2
The area of parallelogram is greater
The difference = $50 - 24 = 26$ cm^2

(22) [a] $x + 3 = 12$ $x = 12 - 3$ $x = 9$
[b] $2x - 7 = 5$ $2x = 5 + 7$ $2x = 12$
$x = \frac{12}{2}$ $x = 6$

(23)



(24) [a] $X \cap Y = \{5 , 6\}$
[b] $X \cup Y = \{2 , 3 , 4 , 5 , 6 , 7\}$
[c] $X - Y = \{2 , 3 , 4\}$

(25) [a] $25 \times 304 = 25 \times (300 + 4)$
$= 25 \times 300 + 25 \times 4$
$= 7500 + 100 = 7600$
[b] $642 + 171 + 358 + 29$
$= 642 + 358 + 171 + 29$
$= (642 + 358) + (171 + 29)$
$= 1000 + 200 = 1200$

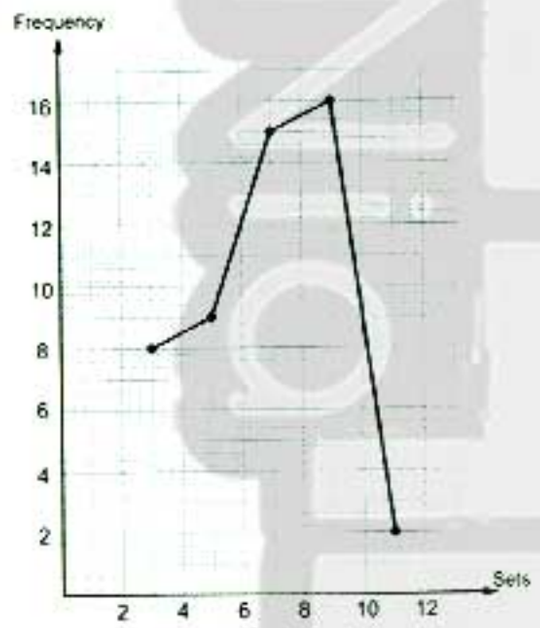
(26) The area of Δ ABC = $\frac{1}{2} \times 6 \times 4 = 12$ cm^2

(27) The distance of one turn = 66×3.14
$= 207.24$ cm.
The distance of 1000 turn = 207.24×1000
$= 207240$ cm.

(28) The length of the semicircle
$= \frac{1}{2} \times 14 \times \frac{22}{7} = 22$ cm.
The perimeter of the figure
$= 22 + 14 + 28 + 28 = 92$ cm.

(29) Let the number be x
, then $x + 3 = 9$ $x = 9 - 3$ $x = 6$

(30)



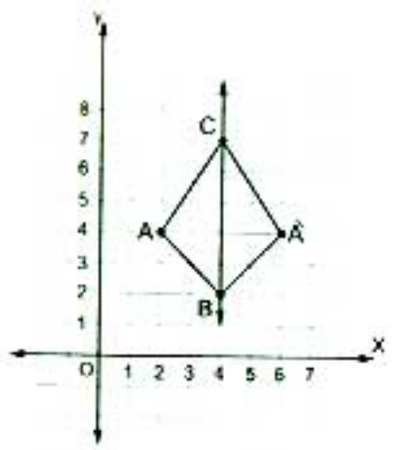
Model 14

1 (1) {2} (2) y + 5 (3) 2
(4) 100 (5) 9 a – 4 (6) $\not\subset$
(7) 66 (8) reflection (9) 60
(10) 16 (11) 60 (12) 13
(13) 20 (14) 3

2 (15) 5 , 7 (16) additive identity element
(17) identical (18) 1 (19) 6
(20) {0 , 1 , 2}

3 (21) [a] $73 \times 1001 = 73 \times (1000 + 1)$
$= 73 \times 1000 + 73 \times 1$
$= 73000 + 73 = 73073$
[b] $872 + 199 + 128 + 801$
$= 872 + 128 + 199 + 801$
$= (872 + 128) + (199 + 801)$
$= 1000 + 1000 = 2000$

(22)



(23) [a] $2x + 9 = 21$ $2x = 21 - 9$ $2x = 12$
$x = \frac{12}{2}$ $x = 6$
[b] $5 - y = 3$ $5 - 3 = y$ $y = 2$

(24) The area = $6 \times 12 = 72$ cm^2

(25) [a] $25 \times 37 \times 4 = 25 \times 4 \times 37$
$= (25 \times 4) \times 37 = 100 \times 37$
$= 3700$
[b] $5 \times (20 + 15) = 5 \times 20 + 5 \times 15$
$= 100 + 75 = 175$

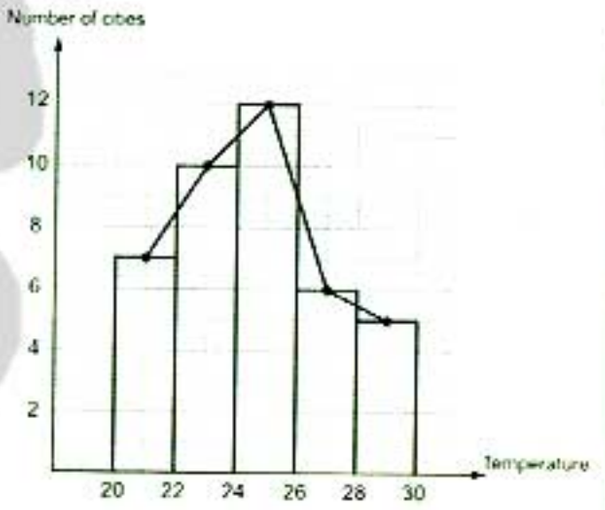
(26) The length of the semicircle
$= 7 \times \frac{22}{7} = 22$ cm.
The perimeter of the figure
$= 22 + 7 + 7 = 36$ cm.

(27) $x - 2y = 7$

(28) $37 \times 46 + 37 \times 54 = 37 \times (46 + 54)$
$= 37 \times 100 = 3700$

(29) [a] $(2x + 6)$ years [b] $(2x - 3)$ years

(30) [a]



[b] 17 cities.

Model 15

1 (1) even (2) 14 (3) 1
(4) 10 (5) 2 (6) 10
(7) 85 (8) 3 (9) $\in$
(10) $2x - 7$ (11) 20 cm^2 (12) 1
(13) $20 - x$ (14) 25

2 (15) its diagonal lengths (16) (2 , 5)
(17) 2 y + 9 (18) rotation
(19) associative (20) $10 - x$

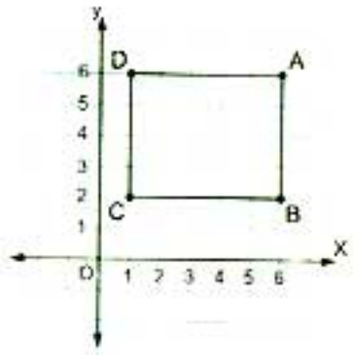
3 (21) {2 , 3 , 4 , 5 , 6 , 7}



(22) $82 + 75 + 18 + 25 = 82 + 18 + 75 + 25$
$= (82 + 18) + (75 + 25)$
$= 100 + 100 = 200$

(23) The area of rhombus = $\frac{1}{2} \times 8 \times 6$
$= 24$ cm^2
The area of parallelogram = 10×5
$= 50$ cm^2
The area of parallelogram is greater.

(24)



[a] rectangle [b] 4 units

(25) [a] $X \cup Y = \{1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 , 9\}$
[b] $X \cap Y = \{2 , 4\}$
[c] $X - Y = \{1 , 3 , 5 , 6 , 7 , 8\}$

(26) [a] $3x + 7 = 19$ $3x = 19 - 7$ $3x = 12$
$x = \frac{12}{3}$ $x = 4$
[b] $2y + 5 = 10$ $2y = 10 \times 5$ $2y = 50$
$y = \frac{50}{2}$ $y = 25$

(27) The distance of one turn = 50×3.14
$= 157$ cm.

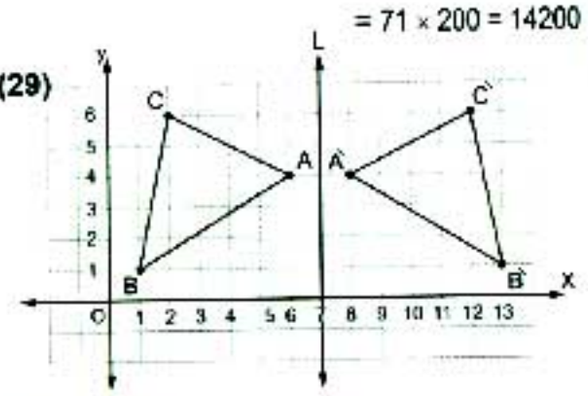
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The distance of 1200 turns = 157 × 1200
= 188400 cm. = 1884 m.

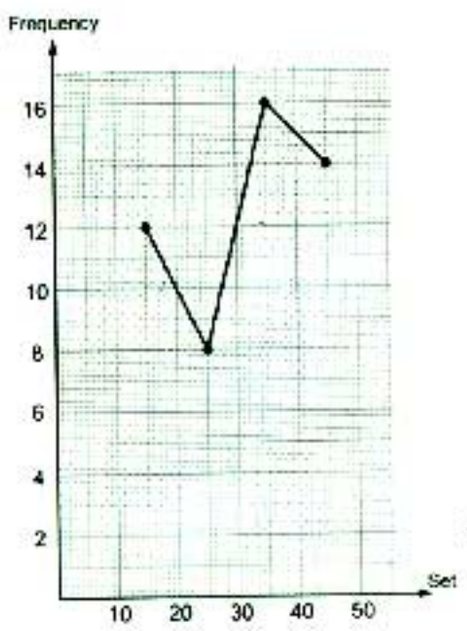
(28) [a] 8 × 12 × 125 = 8 × 125 × 12
= (8 × 125) × 12
= 1000 × 12 = 12000

[b] 231 × 71 – 31 × 71 = 71 × (231 – 31)
= 71 × 200 = 14200

(29)



(30)



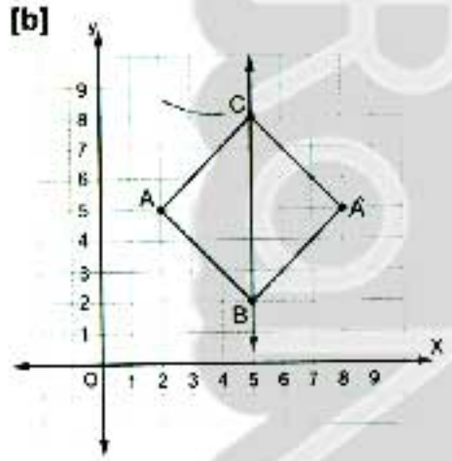
Model 16

1 (1) 9 (2) 10 (3) 1
(4) 96 (5) ⊂ (6) 98
(7) 24 (8) 0 (9) $\frac{15}{a}$
(10) 40 π (11) 3 y + 5 (12) 5
(13) ⊄ (14) 3

2 (15) 7 (16) {3 , 4 , 5 , 6}
(17) 84 , 36 (18) 100
(19) 4 × 16 , 5 × 32
(20) base length × corresponding height

3 **(21) [a]** BC = 6 units.

[b]



(22) $5x - 7 = 33$ $5x = 33 + 7$ $5x = 40$
$x = \frac{40}{5}$ $x = 8$

(23) [a] 26 × 999 = 26 × (1000 – 1)
= 26 × 1000 – 26 × 1
= 26000 – 26 = 25974

[b] 321 + 627 + 179 + 373
= 321 + 179 + 627 + 373
= (321 + 179) + (627 + 373)
= 500 + 1000 = 1500

(24) The length of the semicircle = $\frac{1}{2} \times 7 \times \frac{22}{7}$
= 11 cm.
The perimeter of the figure = 11 + 9 + 8
= 28 cm.

(25) The area of square = 12 × 12 = 144 cm^2
The area of rhombus = $\frac{1}{2} \times 20 \times 14$
= 140 cm^2
The area of rhombus is smaller.

(26) 4 × 31 × 25 = 4 × 25 × 31
= (4 × 25) × 31
= 100 × 31 = 3100

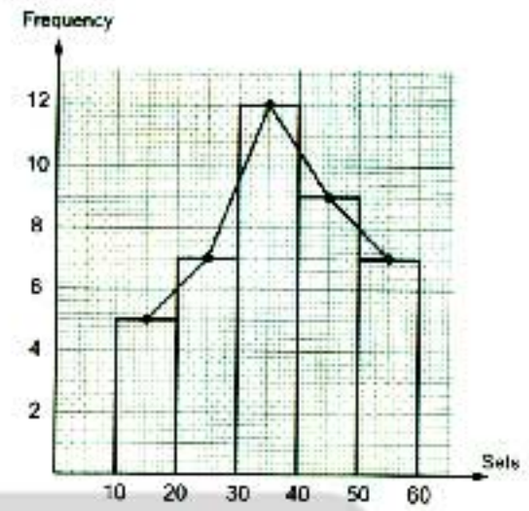
(27) $2x + 10 = 24$ $2x = 24 - 10$ $2x = 14$
$x = \frac{14}{2}$ $x = 7$

(28) $\frac{1}{2}x + 8 = 10$ $\frac{1}{2}x = 10 - 8$ $\frac{1}{2}x = 2$
$x = 2 \times 2$ $x = 4$

(29) [a] a × b – c = 5 × 3 – 1 = 15 – 1 = 14

[b] $\frac{a - c}{b} = \frac{5 - 1}{3} = \frac{4}{3}$

(30) A = 9



Model 17

1 (1) reflection (2) 4 (3) 44
(4) 50 (5) 4 y (6) 12
(7) 13 (8) ∉ (9) 2
(10) even (11) commutative
(12) 5 (13) 32 (14) ∈

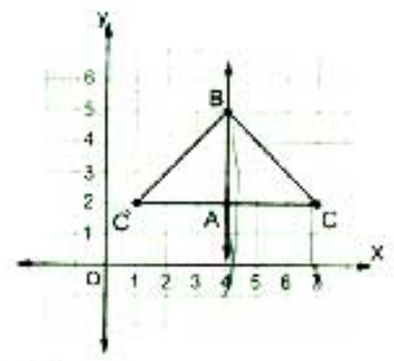
2 (15) 5 (16) 3 (17) $\overleftrightarrow{BF}$
(18) 4 , 1 (19) y + 5 (20) {2 , 3 , 4 , 5}

3 **(21)** The circumference of the circle = $14 \times \frac{22}{7}$
= 44 cm.
The perimeter of the figure = 44 + 28 + 28
= 100 cm.

(22) 8 × 34 × 125 = 8 × 125 × 34
= (8 × 125) × 34 = 1000 × 34 = 34000

(23) $3x - 6 = 12$ $3x = 12 + 6$ $3x = 18$
$x = \frac{18}{3}$ $x = 6$

(24)



AB = 3 units

(25) The area = $\frac{1}{2} \times 12 \times 8 = 48$ cm^2

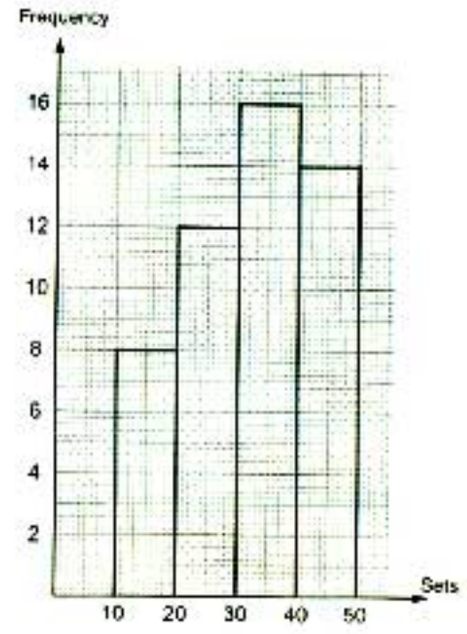
(26) x = 2 or 3 or 5

(27) [a] 14 **[b]** 7 **[c]** 84 **[d]** 21

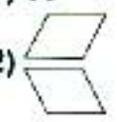
(28) 299 × 12 = (300 – 1) × 12
= 300 × 12 – 1 × 12 = 3600 – 12
= 3588

(29) {0 , 2 , 4 , 6 , ...}

(30)



Model 18

1 (1) ∅ (2) Area of square (3) 66
(4) ℕ (5) < (6) 3 x – 2
(7) 35 (8) 2 π (9) 36
(10) 3 (11) 50 (12) 
(13) 48 (14) ⊄

2 (15) {0 , 1 , 2 , 3 , 4 , 5 , 6}
(16) 100 , 9100 (17) 25 (18) odd
(19) 22 , 27 (20) commutative

3 **(21)** The area = $\frac{1}{2} \times 30 \times 20 = 300$ cm^2

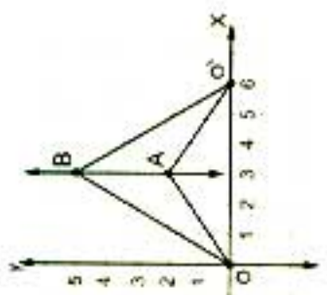
(22) [a] $x - 4 = 1$ $x = 1 + 4$ $x = 5$

[b] $3x + 8 = 29$ $3x = 29 - 8$
$3x = 21$ $x = \frac{21}{3}$ $x = 7$

[b] $\frac{1}{2}y + 1 = 3 \quad \frac{1}{2}y = 3 - 1 \quad \frac{1}{2}y = 2$

$y = 2 \times 2 \quad y = 4$

(23)



(24) 127

(25) [a] $25 \times 31 \times 4 = 25 \times 4 \times 31$

$= (25 \times 4) \times 31$

$= 100 \times 31 = 3100$

[b] $28 + 17 + 72 + 83 = 28 + 72 + 17 + 83$

$= (28 + 72) + (17 + 83)$

$= 100 + 100 = 200$

(26) [a] The area $= 10 \times 12 = 120$ cm^2.

[b] $BC = \frac{120}{8} = 15$ cm.

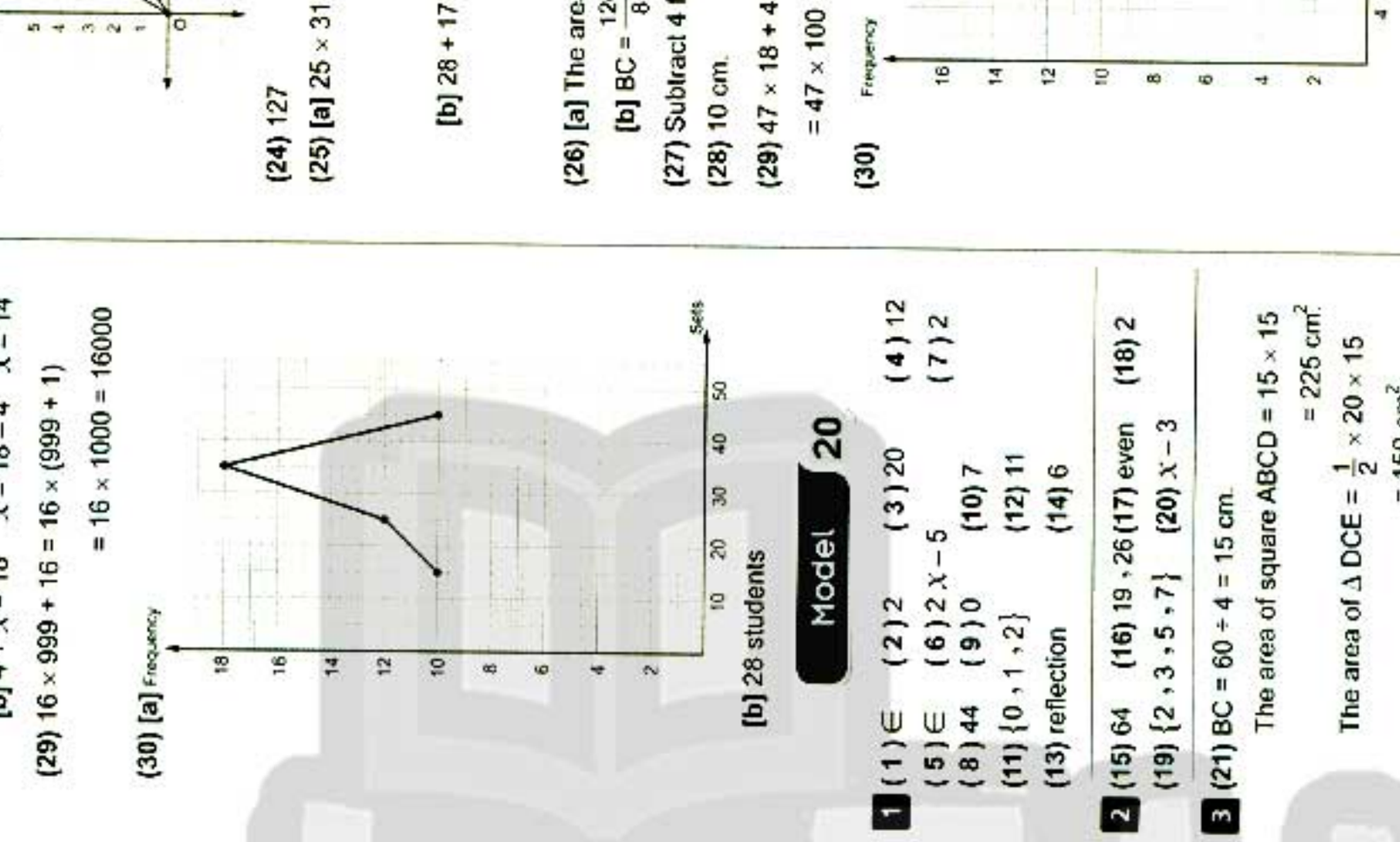
(27) Subtract 4 from 3 times the number h

(28) 10 cm.

(29) $47 \times 18 + 47 \times 82 = 47 \times (18 + 82)$

$= 47 \times 100 = 4700$

(30)



(28) [a] $5x - 7 = 33 \quad 5x = 33 + 7 \quad 5x = 40$

$x = \frac{40}{5} \quad x = 8$

[b] $4 + x = 18 \quad x = 18 - 4 \quad x = 14$

(29) $16 \times 999 + 16 = 16 \times (999 + 1)$

$= 16 \times 1000 = 16000$

(30) [a]

[b] 28 students

Model 20

1 (1) $\in$ (2) 2 (3) 20 (4) 12
(5) $\in$ (6) $2x - 5$ (7) 2
(8) 44 (9) 0 (10) 7
(11) {0 , 1 , 2} (12) 11
(13) reflection (14) 6

2 (15) 64 (16) 19 , 26 (17) even (18) 2
(19) {2 , 3 , 5 , 7} (20) $x - 3$

3 (21) $BC = 60 \div 4 = 15$ cm.

The area of square ABCD $= 15 \times 15$

$= 225$ cm^2.

The area of Δ DCE $= \frac{1}{2} \times 20 \times 15$

$= 150$ cm^2.

The area of figure ABED $= 225 + 150$

$= 375$ cm^2.

(22) [a] $22 = x + 10 \quad 22 - 10 = x \quad 12 = x$

Model 19

1 (1) isosceles (2) $10 - x$
(3) 15 (4) odd (5) 18 (6) 7
(7) 99 (8) 1 (9) $3x$ (10) 3.5
(11) $\in$ (12) 8 (13) rotation
(14) $8 \times 50 + 8 \times 4$

2 (15) 256 (16) 5 (17) 47
(18) 35 , 36 , 100 , 135
(19) 9 (20) $\varnothing$

3 (21) The area of parallelogram $= 6 \times 4 = 24$ cm^2.

The smaller height $= \frac{24}{8} = 3$ cm.

(22) $32 + 47 + 68 + 3 = 32 + 68 + 47 + 3$

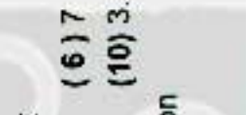
$= (32 + 68) + (47 + 3)$

$= 100 + 50 = 150$

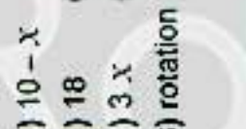
(23) The area $= \frac{1}{2} \times 6 \times 8 = 24$ cm^2.

$AD = \frac{2 \times 24}{10} = 4.8$ cm.

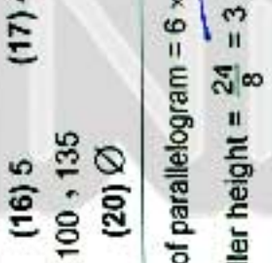
(24) [a]



[b]



(25)

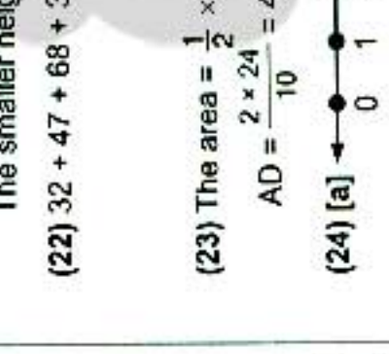


ABCD is a square.

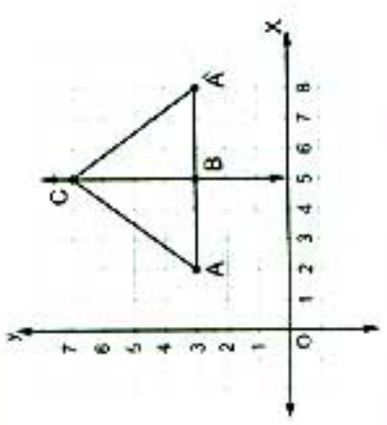
its area $= 4 \times 4 = 16$ square units.

(26) $7k = 56 \quad k = \frac{56}{7} \quad k = 8$

(27)



(23)



(24) [a] $8 \times 135 \times 125 = 8 \times 125 \times 135$

$= (8 \times 125) \times 135$

$= 1000 \times 135 = 135000$

[b] $56 \times 42 - 56 \times 32 = 56 \times (42 - 32)$

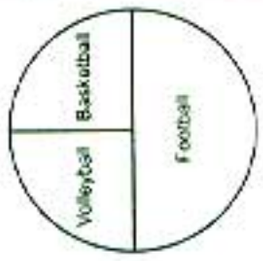
$= 56 \times 10 = 560$

(25) [a] $X \cap Y = \{5\}$

[b] $X \cup Y = \{1 , 3 , 4 , 5 , 6 , 7 , 8\}$

[c] $Y - X = \{1 , 3\}$

(26) Football $= \frac{20}{40} = \frac{1}{2}$



Basketball $= \frac{10}{40} = \frac{1}{4}$

Vollyball $= \frac{10}{40} = \frac{1}{4}$

(27) $x - 9 = 23$

(28) The perimeter $= 3 + 5 + 3 + 5 + 3 = 19$ cm.

(29) $319 \times 101 = 319 \times (100 + 1)$

$= 319 \times 100 + 319 \times 1$

$= 31900 + 319 = 32219$

(30) [a] $k = 11$

[b]



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Answers of Final examinations

Answers of models of school book

Model 1

1 (a) ∈ (b) 2 (c) 24

2 (a) (1) 20 (2) associative

(b) The area of the square $= \frac{1}{2} \times 10 \times 10 = 50\ cm^2$.

The area of triangle $= \frac{1}{2} \times 8 \times 15 = 60\ cm^2$.

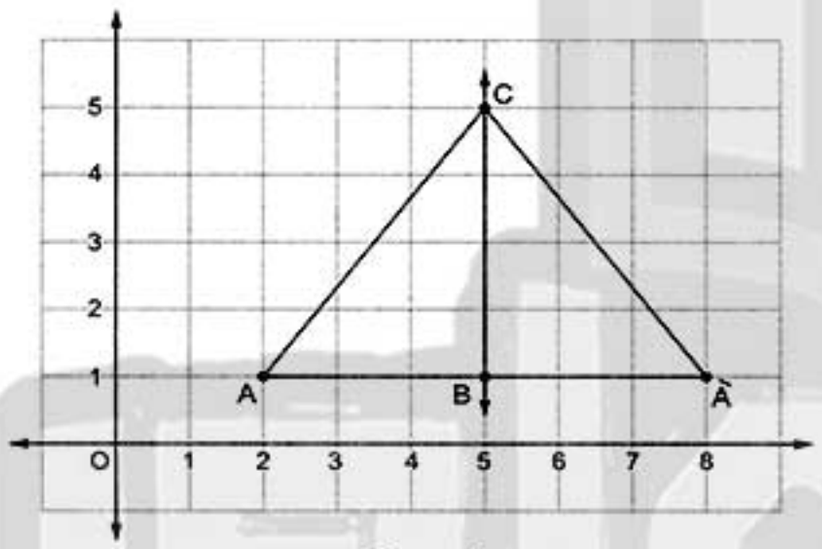
The area of triangle is greater.

3 The equation is : $2x + 10 = 24$

$2x + 10 = 24$ $2x = 24 - 10$

$2x = 14$ $x = 14 \div 2$ $x = 7$

4 (a)



The area of $\Delta ACȦ = \frac{1}{2} \times 6 \times 4$

$= 12$ units area

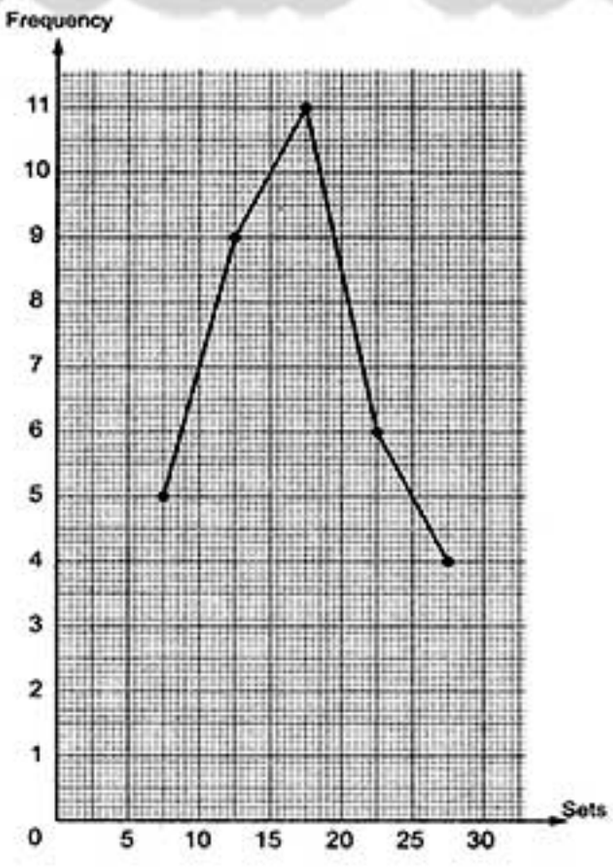
(b) The area of the parallelogram

$= 12 \times 5 = 60\ cm^2$.

The height $= 60 \div 6 = 10$ cm.

5 (a) (1) < (2) <

(b)



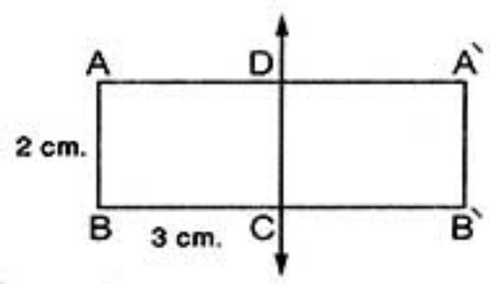
Model 2

1 (a) its diagonal , it self (b) ∈

(c) 100 , 2300 (d) {1 , 2 , 3 , 4}

2 (a) (1) 15 (2) ⊂ (3) 22

(b)



3 (a) (1) The area $= \frac{1}{2} \times 10 \times 8 = 40\ cm^2$.

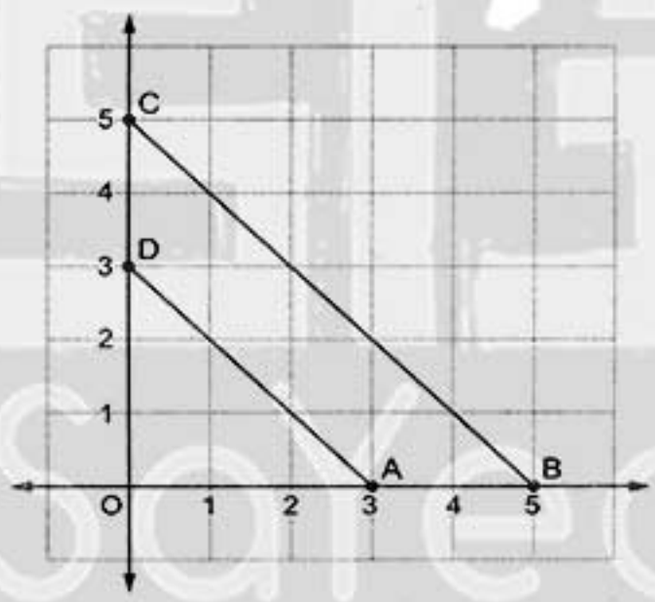
(2) Δ ADC

(b) The equation is : $20 - 3x = 5$

$20 - 3x = 5$ $20 - 5 = 3x$

$3x = 15$ $x = 15 \div 3$ $x = 5$

4 (a)



The area of $\Delta OBC = \frac{1}{2} \times 5 \times 5$

$= 12\frac{1}{2}$ square units.

The area of $\Delta OAD = \frac{1}{2} \times 3 \times 3$

$= 4\frac{1}{2}$ square units.

The area of figure ABCD

$= 12\frac{1}{2} - 4\frac{1}{2} = 8$ square units.

(b) 872 + 199 + 128 + 801

= 872 + 128 + 199 + 801

= (872 + 128) + (199 + 801)

= 1000 + 1000 = 2000

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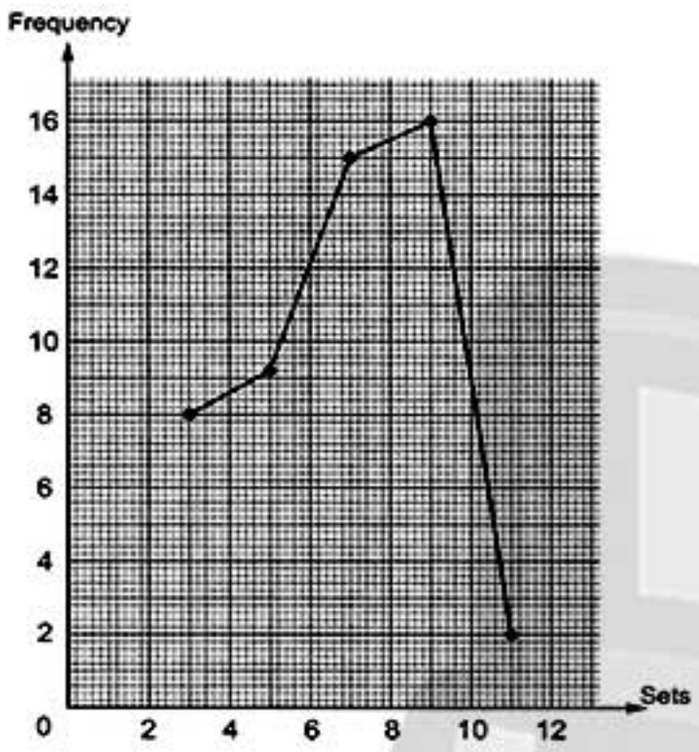
Answers of final examinations

5 (a) (1) The perimeter
$= \left(35 \times \frac{22}{7}\right) + 70 + 70 + 70 = 320$ cm.

(2) The area of the square $= 70 \times 70$
$= 4900$ cm^2.

The area of the semicircle
$= 6825 - 4900 = 1925$ cm^2.

(b)



Model 3

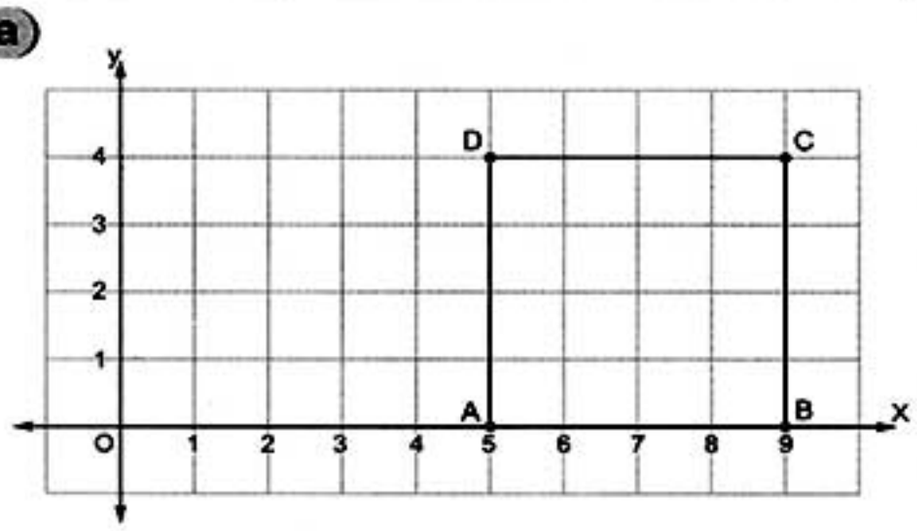
1 (a) 12 (b) 18 (c) ∅

2 (a) (1) $x\pi$ (2) 8

(b) The area of the rhombus $= \frac{1}{2} \times 6 \times 8$
$= 24$ cm^2.
The area of the square $= \frac{1}{2} \times 8 \times 8$
$= 32$ cm^2.
The area of the square is greater.

(c) $2x + 9 = 21$ $2x = 21 - 9$
$2x = 12$ $x = 12 \div 2$ $x = 6$

3 (a)



The area of the shape ABCD
$= 4 \times 4 = 16$ square units.

(b) $25 \times 9892 \times 4 = 25 \times 4 \times 9892$
$= 100 \times 9892$
$= 989200$

4 The distance around the figur
$= \left(14 \times \frac{22}{7}\right) + 28 + 28 = 100$ cm.

5



Model 4

1 (a) 1 (b) 5 (c) 100

2 (a) 2r (b) (2 , 5) (c) 10 (d) 20

3 (a) The distance around the figure
$= \left(7 \times \frac{22}{7}\right) + 14 = 36$ cm.

(b) $653 + 548 + 347 = 653 + 347 + 548$
$= (653 + 347) + 548$
$= 1000 + 548 = 1548$

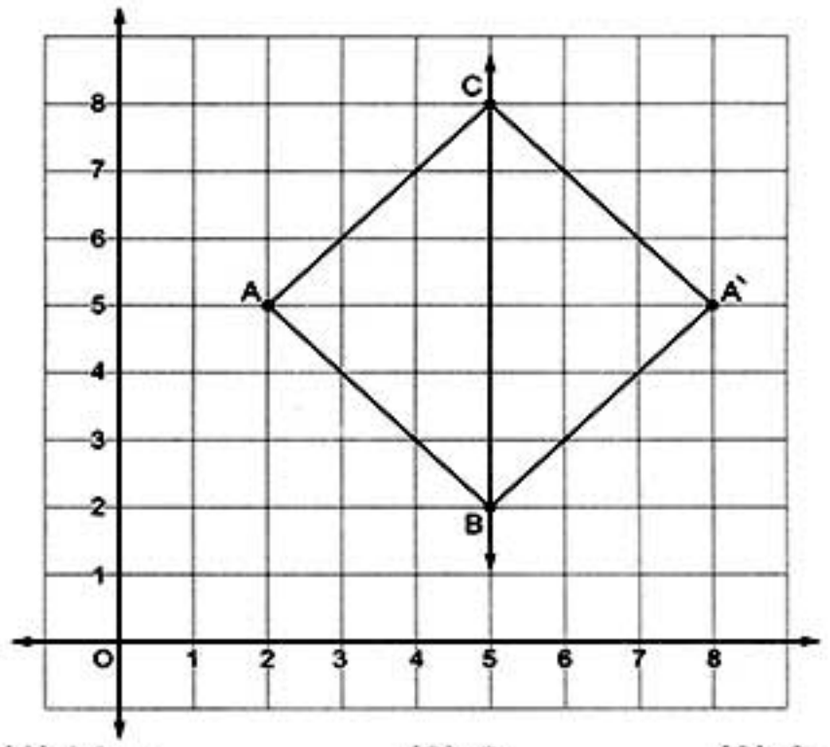
4 (a) $X = \{3 , 4 , 5 , 6 , 7\}$



(b) The area of triangle $= \frac{1}{2} \times 6 \times 8 = 24$ cm^2.
The length of $\overline{BD} = \frac{24 \times 2}{10} = 4.8$ cm.

(c) The equation is : $3x - 1 = 8$
$3x = 8 + 1$ $3x = 9$ $x = 9 \div 3$ $x = 3$

5 (a)



(b) (1) blue (2) 6 (3) 3

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Answers of Final examinations

Model 5

1 (a) E (b) 1 (c) $(x + 10)$ pounds
(d) $21 - x$ (e) 100 cm^2.

2 (a) $\subset$ (b) even (c) $2x - 3$
(d) 20 cm^2. (e) 2

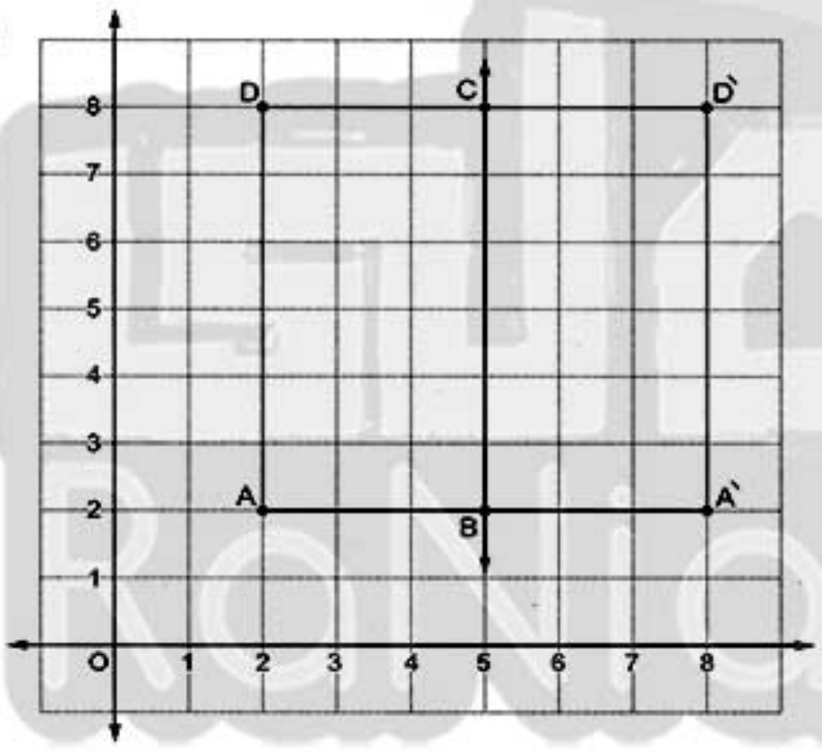
3 (a) The numbers are : $x + 5$, $x + 7$, $x + 9$, $x + 11$, $x + 13$

(b) The area of the rhombus $= \frac{1}{2} \times 8 \times 6$
$= 24$ cm^2.
, the area of the parallelogram $= 10 \times 5$
$= 50$ cm^2.
The difference $= 50 - 24 = 26$ cm^2.

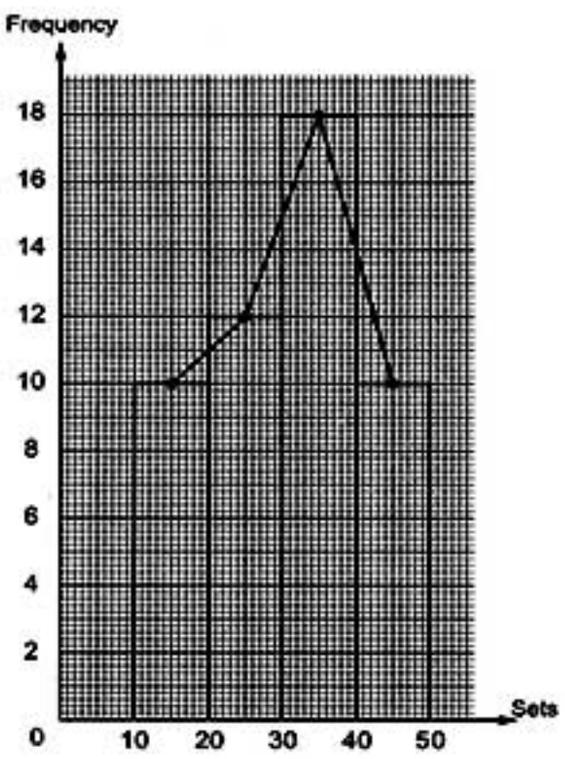
4 (a) $14 - 3x = 8$

(b) The perimeter $= \left(35 \times \frac{22}{7}\right) + 70 = 180$ cm.

5 (a)



(b)



Model 6

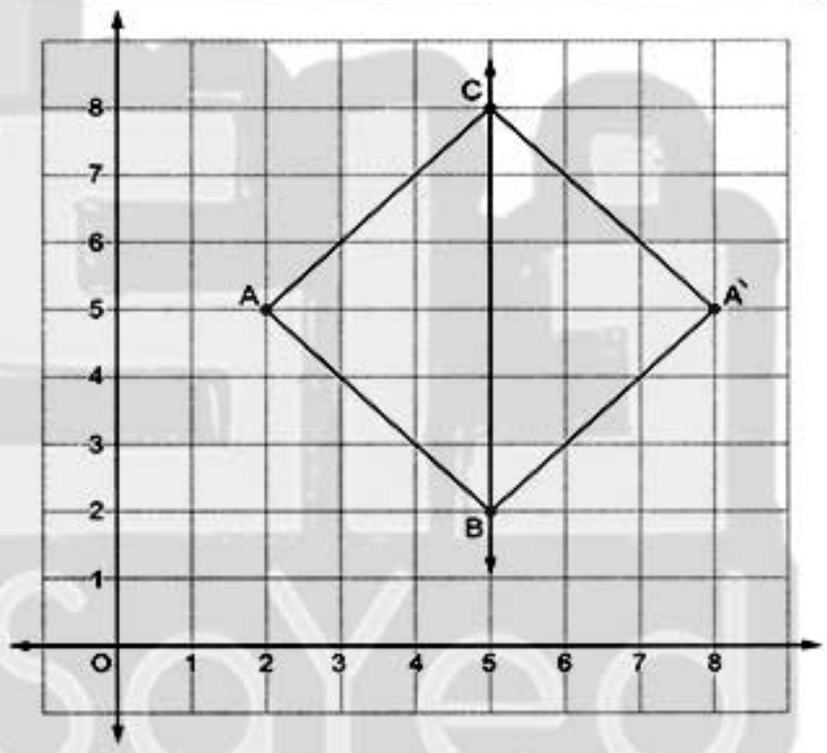
1 (a) $\in$ (b) 9 (c) 60
(d) $2y - 4$ (e) odd

2 (a) 68 , 59 (b) 2 (c) 3 ℓ cm.
(d) d $\times$ d (e) 19

3 (a) The area of the triangle $= \frac{1}{2} \times 12 \times 8$
$= 48$ cm^2.
The area of the parallelogram
$= 10 \times 5 = 50$ cm^2.
The area of the parallelogram is greater.

(b) The area of the parallelogram
$= 10 \times 12 = 120$ cm^2.
BC $= \frac{120}{8} = 15$ cm.

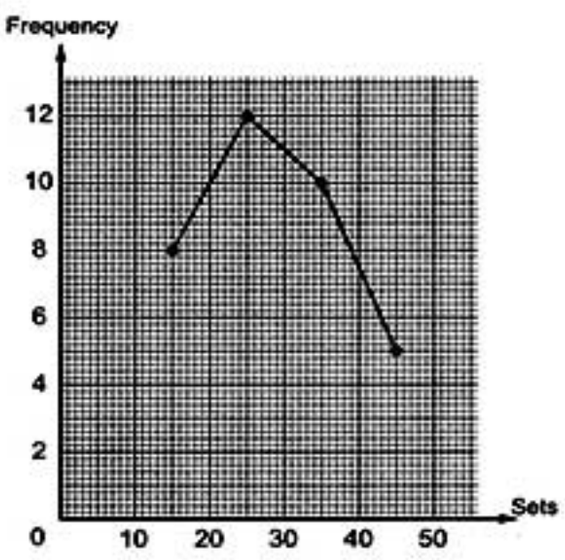
4



BC = 6 length unit.
, number of axes of symmetry of the figure = 2 , its area $= \frac{1}{2} \times 6 \times 6 = 18$ square unit.

5 (a) (1) $x = 9$ (2) $x = 6$

(b)



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Answers of final examinations

Model 7

1 (a) 7 (b) 32 (c) $\{3 , 4\}$
(d) $\subset$ (e) 15

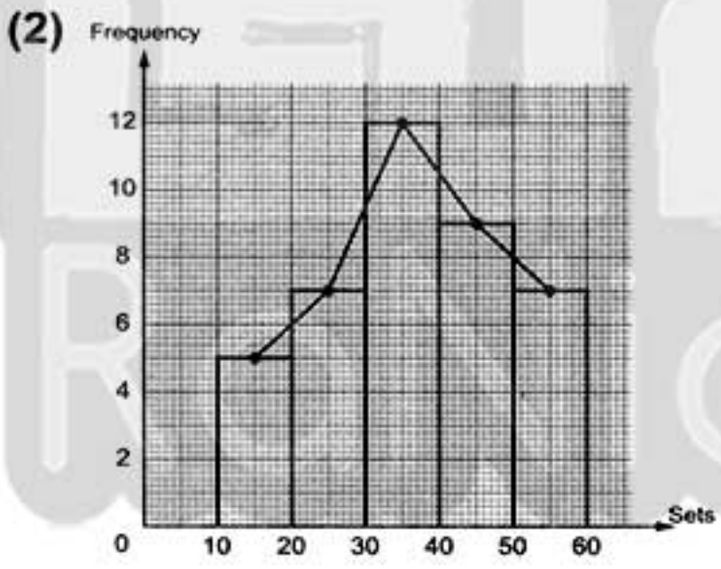
2 (a) 35 , 36 , 100 , 135 (b) 9 (c) 12
(d) 19 (e) 11

3 (a) The covered distance if the wheel turns one turn = $56 \times \frac{22}{7} = 176$ cm.
The number of turns = $35200 \div 176 = 200$
(b) $x - 2y = 7$
(c) **(1)** $(x + 7)$ years **(2)** $(x - 10)$ years

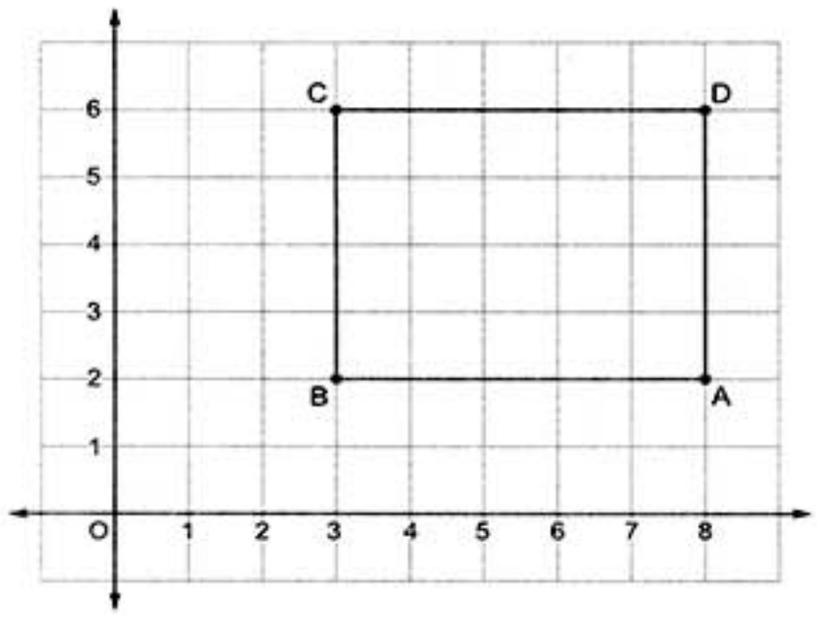
4 (a) **(1)** $8 \times 125 \times 137 = (8 \times 125) \times 137$
$= 1000 \times 137 = 137000$
(2) $28 + 72 + 59 = (28 + 72) + 59$
$= 100 + 59 = 159$

(b) $DC = \frac{828}{23} = 36$ cm. , $EC = 35 - 23 = 12$ cm.
The area of $\Delta DCE = \frac{1}{2} \times 12 \times 36$
$= 216$ cm^2.

5 (a) **(1)** A = 9
(2)



(b)



(1) 5 **(2)** 4
(3) a rectangle **(4)** 18

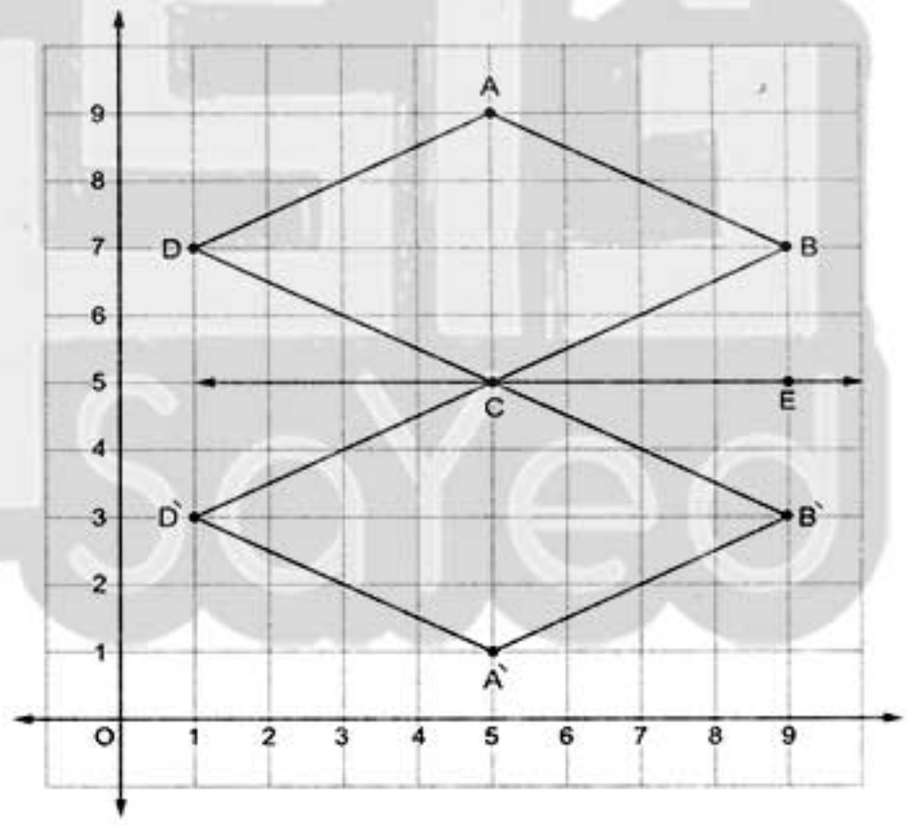
Model 8

1 (a) 28 (b) $2x - 7$ (c) $\{0 , 1 , 2\}$
(d) 81 (e) 48

2 (a) 4 (b) 44
(c) $\{2 , 3 , 5 , 7 , 11 , 13\}$
(d) 15 (e) 100 , 7400

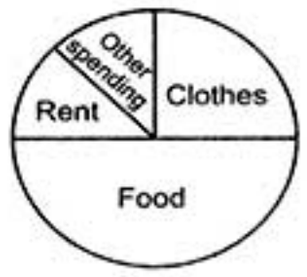
3 (a) **(1)** $519 (100 - 1)$
$= 519 \times 100 - 519 \times 1$
$= 51900 - 519 = 51381$
(2) $316 (1000 + 1)$
$= 316 \times 1000 + 316 \times 1$
$= 316000 + 316 = 316316$
(b) **(1)** 8 **(2)** 28 **(3)** 84

4



$\grave{A}$ (5 , 1) , $\grave{B}$ (9 , 3) , $\grave{C}$ (5 , 5) and $\grave{D}$ (1 , 3)
The figure ABCD is a rhombus , the area of the figure ABCD $= \frac{1}{2} \times 8 \times 4 = 16$ square unit.

5 (a) **(1)** $x = 2$ **(2)** $x = 4$
(b)



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Answers of Final examinations

Model 9



1 (a) {3 , 2} (b) $\notin$ (c) 10
(d) 28 (e) 20

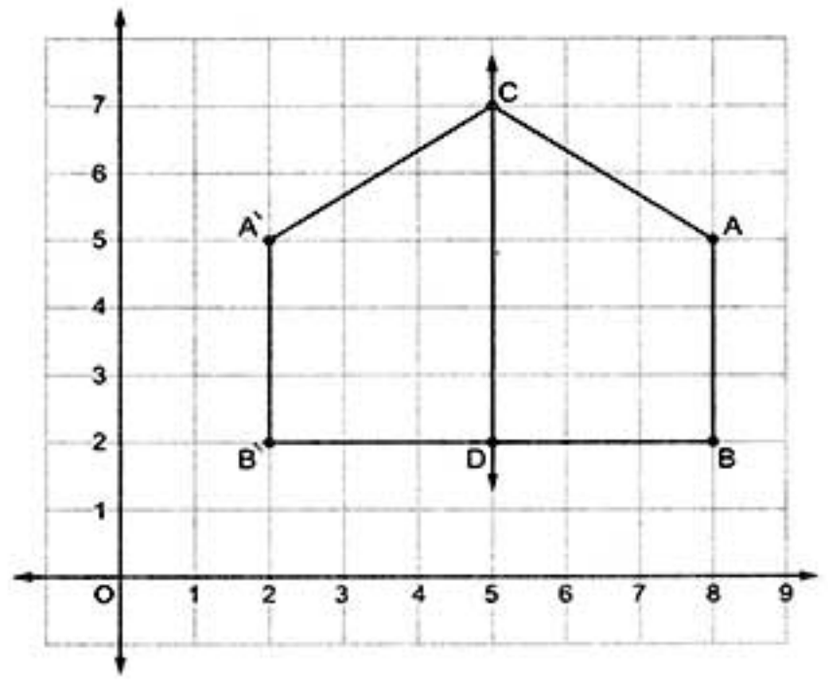
2 (a) $\varnothing$ (b) 3 y + 5 (c) (8 – x) cm.
(d) 6 cm. (e) 9

3 (a) (1) $x = 6$ (2) $x = 30$

(b) The area of rectangle = the area of square = $\frac{1}{2} \times 12 \times 12 = 72$ cm^2.
, the length of the rectangle = $\frac{72}{8} = 9$ cm.
, the perimeter of the rectangle
= (8 + 9) × 2 = 34 cm.

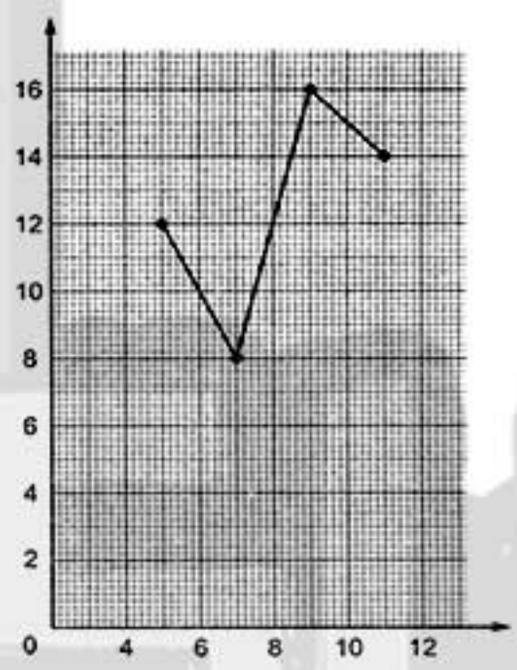
4 (a) The distance covered if the bicycle turns one turn = 50 × 3.14 = 157 cm.
= 1.57 m.
the distance covered if the bicycle turns 1200 turns = 1.57 × 1200 = 1884 m.

(b)



À (2 , 5) , B̀ (2 , 2) , D (5 , 2) and C (5 , 7)

5



RaNia SaYed

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Answers of final examinations

Answers of model examinations

Model 1

1 (a) 4 (b) {3 , 4} (c) $20 - x$ (d) $\subset$

2 (a) 32 (b) 7
(c) translation (d) 13 , 21

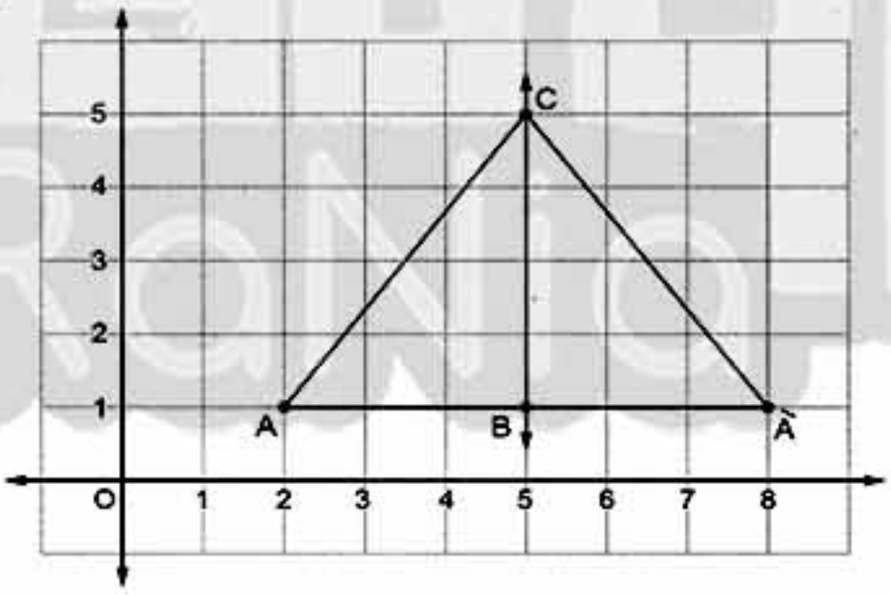
3 (a) The area of triangle ABC = $\frac{1}{2} \times 6 \times 8$
$= 24 \text{ cm}^2$.
The length of $\overline{AD} = \frac{24}{\frac{1}{2} \times 10} = 4.8$ cm.

(b) $873 + 199 + 127 + 801$
$= 873 + 127 + 199 + 801$
(commutative property)
$= (873 + 127) + (199 + 801)$
(associative property)
$= 1000 + 1000 = 2000$

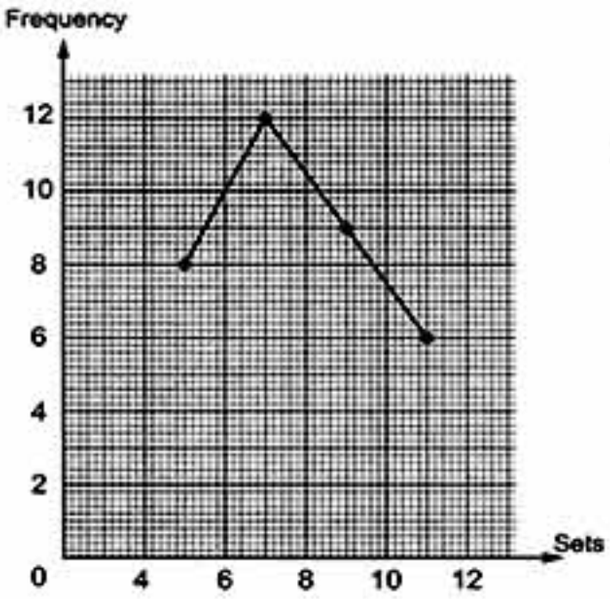
4 (a) $2x + 3 = 5$ $2x = 5 - 3$ $2x = 2$
$x = \frac{2}{2}$ $x = 1$

(b) The perimeter = $\left(\frac{1}{2} \times 2 \times 35 \times \frac{22}{7}\right) + 70$
$= 110 + 70 = 180$ cm.

5 (a)



(b) Frequency



Model 2

1 (a) $\notin$ (b) translation (c) 8 (d) {2}

2 (a) 100 (b) $x + 5$ (c) 2 (d) 6

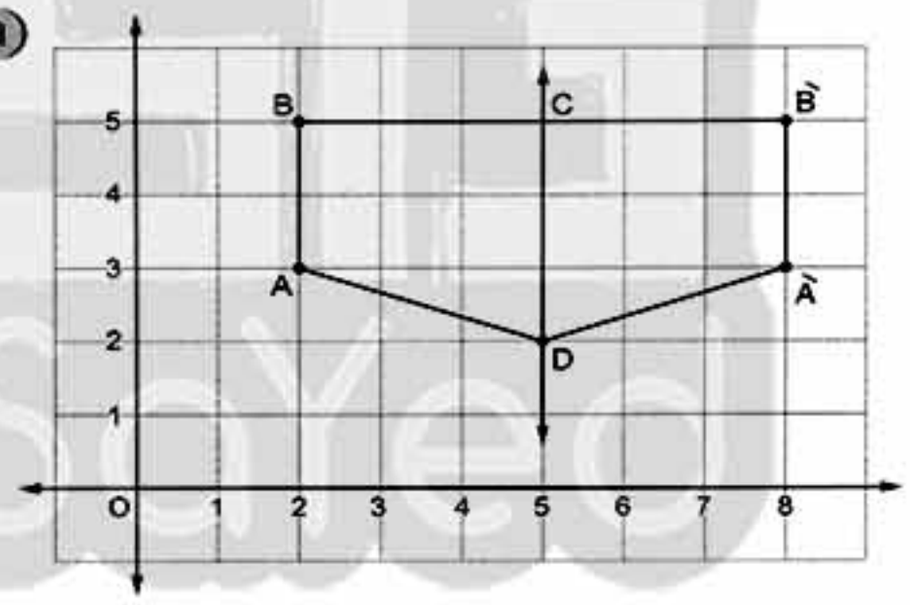
3 (a) The area of the triangle = $\frac{1}{2} \times 10 \times 7$
$= 35 \text{ cm}^2$.
The area of the parallelogram = 8×4
$= 32 \text{ cm}^2$.
The area of the triangle is greater.

(b) (1) $8 \times 149 \times 125 = 8 \times 125 \times 149$
$= (8 \times 125) \times 149 = 1000 \times 149$
$= 149000$
(2) $28 + 78 + 72 = 28 + 72 + 78$
$= (28 + 72) + 78$
$= 100 + 78 = 178$

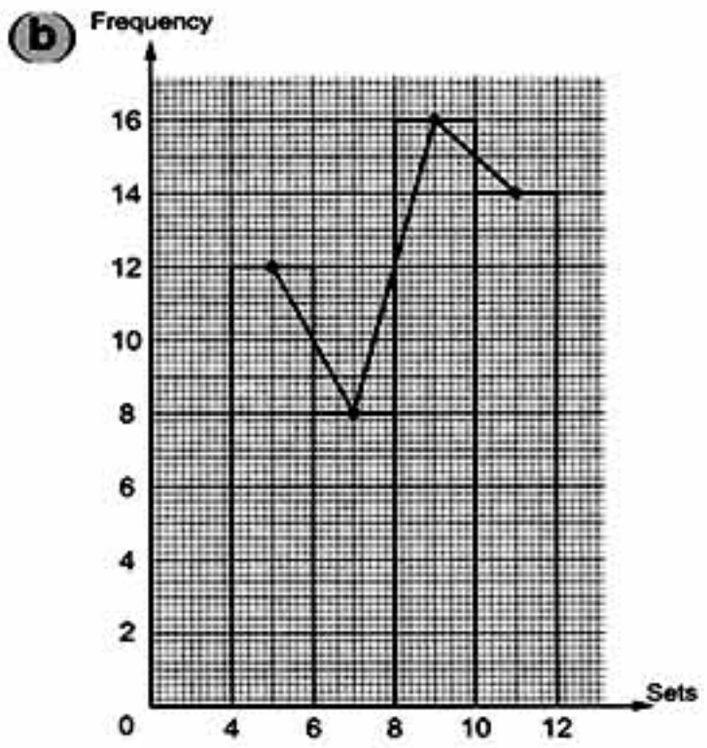
4 (a) (1) $(x + 3)$ years (2) $(x - 5)$ years

(b) The length of the diameter = $\frac{66}{\frac{22}{7}} = 21$ cm.

5 (a)



(b) Frequency



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Answers of Final examinations

Model 3



1 (a) 0 (b) 12 (c) 7 + y (d) even

2 (a) 0 , 1 (b) 5 (c) 3 y + 7 (d) (2 , 5)

3 (a) **(1)** $98 \times 37 = (100 - 2) \times 37$
$= 100 \times 37 - 2 \times 37$
$= 3700 - 74 = 3626$

(2) $299 \times 17 = (300 - 1) \times 17$
$= 300 \times 17 - 1 \times 17$
$= 5100 - 17 = 5083$

(b) **(1)** $3x + 8 = 29 \quad 3x = 29 - 8 \quad 3x = 21$
$x = \frac{21}{3} \quad x = 7$

(2) $\frac{1}{7}x - 3 = 1 \quad \frac{1}{7}x = 1 + 3 \quad \frac{1}{7}x = 4$
$x = 4 \times 7 \quad x = 28$

4 (a) The area of the rhombus $= \frac{1}{2} \times 12 \times 16$
$= 96\ cm^2$.

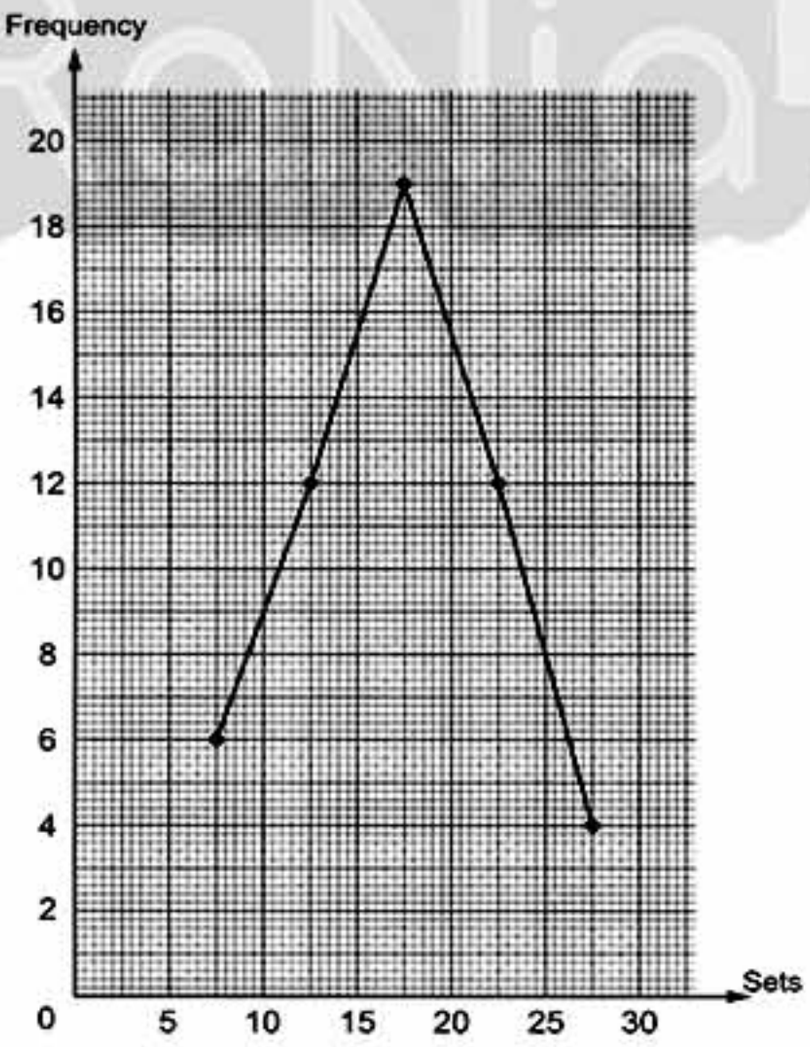
The side length $= 96 \div 9.6 = 10$ cm.

(b) **(1)** $\overline{EF}$ **(2)** $\overline{DF}$

5 (a) The circumference of the wheel $= 50 \times 3.14$
$= 157$ cm.
$= 1.57$ m.

The distance $= 1.57 \times 1000 = 1570$ m.

(b)

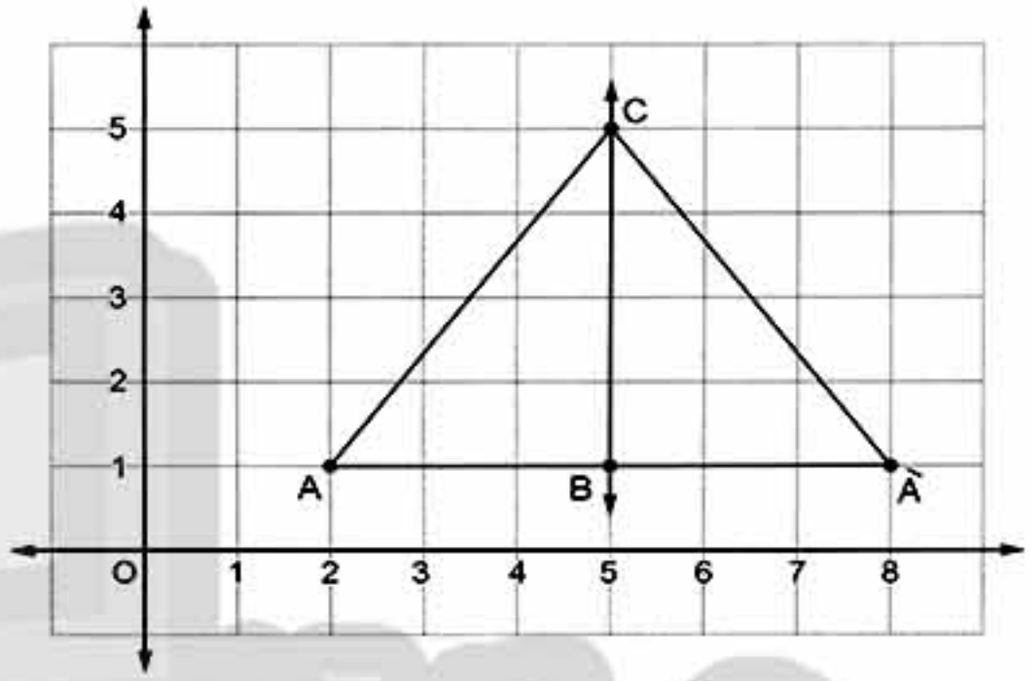


Model 4

1 (a) an odd (b) 4 x (c) 3 (d) 25

2 (a) {1 , 2 , 3 , 4 , 5} (b) rotation
(c) 15 (d) $5 - x$

3 (a)



The sum of areas $= 2 \times \frac{1}{2} \times 3 \times 4$
$= 12$ area unit.

(b) **(1)** $123 + 254 + 377 + 246$
$= 123 + 377 + 254 + 246$
$= (123 + 377) + (254 + 246)$
$= 500 + 500 = 1000$

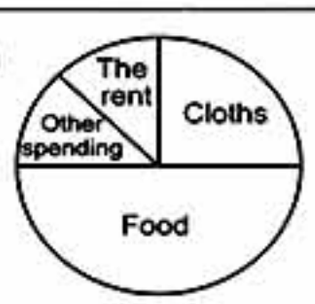
(2) $25 \times 125 \times 4 = 25 \times 4 \times 125$
$= (25 \times 4) \times 125$
$= 100 \times 125 = 12500$

4 (a) The area $= 12 \times 5 = 60\ cm^2$.
The height $= \frac{60}{6} = 10$ cm.

(b) **(1)** $\frac{1}{3}x + 8 = 10 \quad \frac{1}{3}x = 10 - 8$
$\frac{1}{3}x = 2 \quad x = 2 \times 3 \quad x = 6$

(2) $\frac{1}{6}x - 3 = 4 \quad \frac{1}{6}x = 4 + 3 \quad \frac{1}{6}x = 7$
$x = 7 \times 6 \quad x = 42$

5 (a)



(b) The perimeter $= \left(\frac{1}{4} \times 2 \times \frac{22}{7} \times 7\right) + 7 + 7$
$= 11 + 14 = 25$ cm.

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Answers of final examinations

Model 5

1 (a) $2x - 7$ (b) 2 (c) $\varnothing$ (d) 22

2 (a) $\in$ (b) (5 , 4) (c) 1 (d) 5 L – 6

3 (a) $3x + 5 = 20$ $3x = 20 - 5$ $3x = 15$

$x = \frac{15}{3}$ $x = 5$

The price of each notebook is L.E. 5

(b) **(1)** $25 \times 98 \times 4 = 25 \times 4 \times 98$

$= (25 \times 4) \times 98$

$= 100 \times 98 = 9800$

(2) $642 + 173 + 358 + 27$

$= 642 + 358 + 173 + 27$

$= (642 + 358) + (173 + 27)$

$= 1000 + 200 = 1200$

4 (a) The height = 48 ÷ 8 = 6 cm.

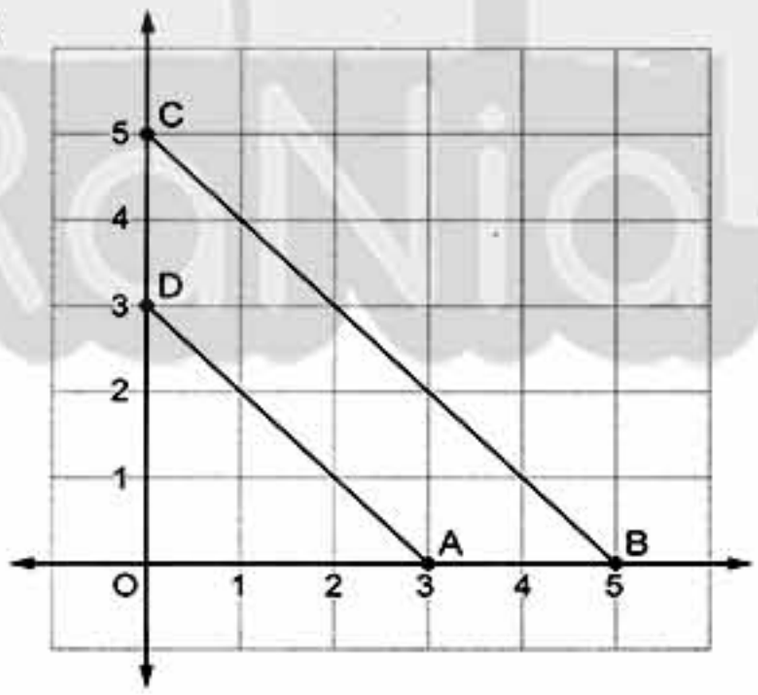
(b) The area of Δ ABC = $\frac{1}{2} \times 6 \times 8 = 24$ cm^2.

The area of Δ EBC = $\frac{1}{2} \times 6 \times 4 = 12$ cm^2.

The area of the shaded part = 24 – 12

= 12 cm^2.

5 (a)



The area of Δ AOD = $\frac{1}{2} \times 3 \times 3$

= 4.5 area unit.

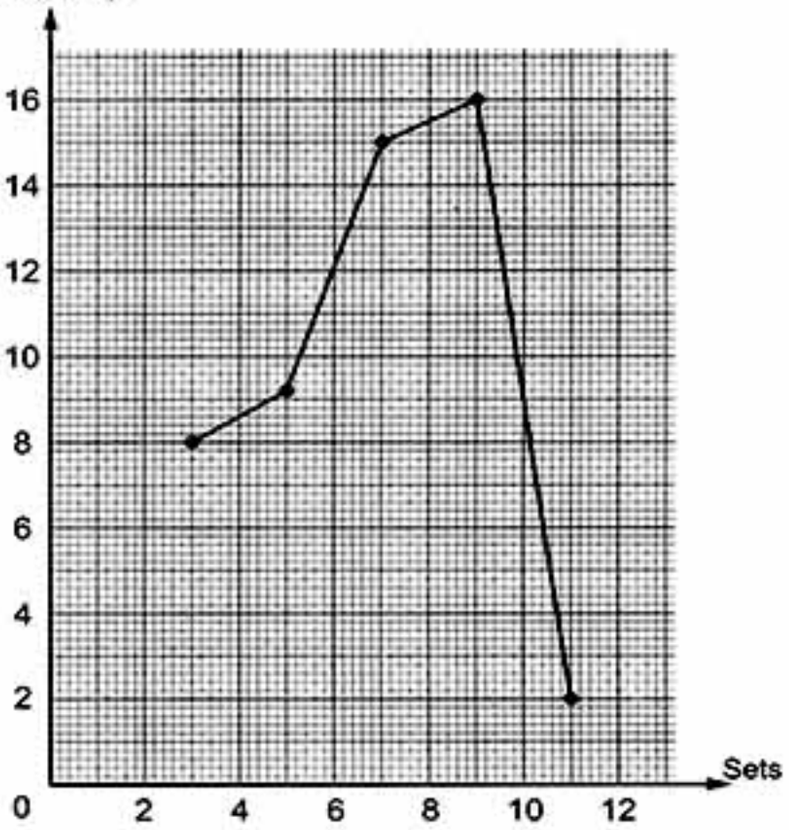
The area of Δ BOC = $\frac{1}{2} \times 5 \times 5$

= 12.5 area unit.

The area of the shape ABCD

= 12.5 – 4.5 = 8 area unit.

(b) Frequency



Model 6

1 (a) $\notin$ (b) zero (c) $2x - 3$ (d) {2}

2 (a) 19 , 26 (b) $x + 10$

(c) translation (d) 32

3 (a) The length of $\overline{CE}$ = 35 – 23 = 12 cm.

The length of $\overline{CD}$ = 828 ÷ 23 = 36 cm.

The area of Δ DCE = $\frac{1}{2} \times 12 \times 36 = 216$ cm^2.

(b) **(1)** $8 \times 133 \times 125 = 8 \times 125 \times 133$

$= (8 \times 125) \times 133$

$= 1000 \times 133 = 133000$

(2) $27 + 69 + 73 = 27 + 73 + 69$

$= (27 + 73) + 69$

$= 100 + 69 = 169$

4 (a) The perimeter = $(6 \times 3.14) + 10 + 10$

$= 18.84 + 10 + 10$

= 38.84 cm.

(b) **(1)** $\frac{1}{3}x + 8 = 9$ $\frac{1}{3}x = 9 - 8$ $\frac{1}{3}x = 1$

$x = 1 \times 3$ $x = 3$

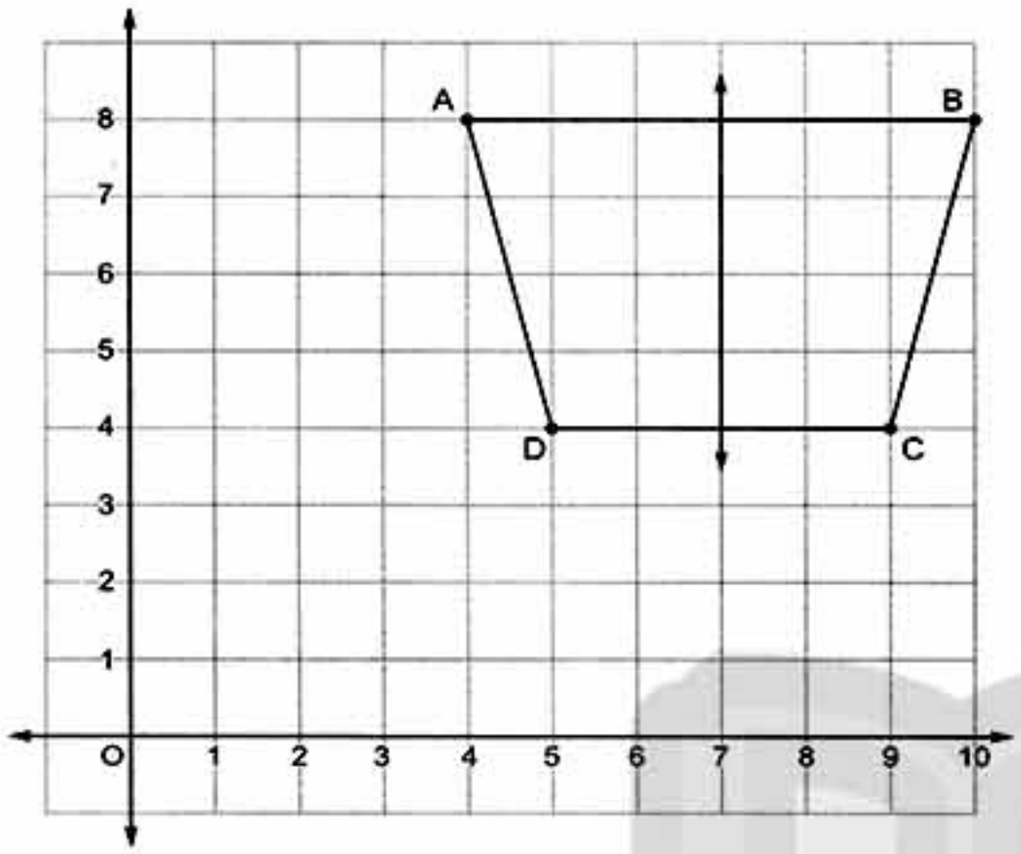
(2) $2x - 3 = 5$ $2x = 5 + 3$ $2x = 8$

$x = 8 \div 2$ $x = 4$

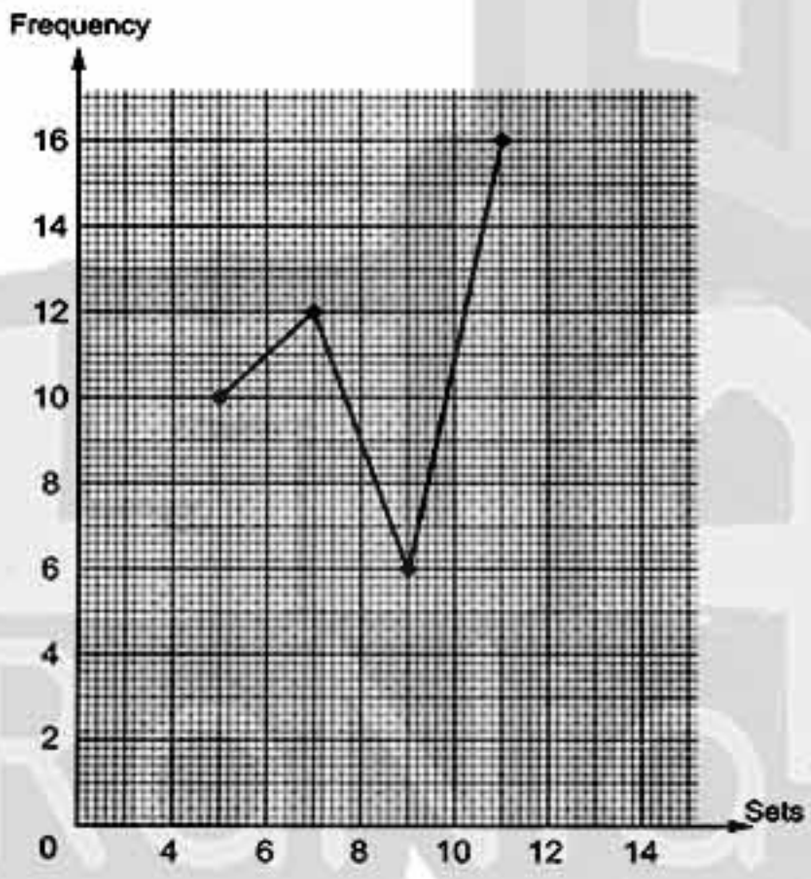
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Answers of Final examinations

5 (a)



(b)

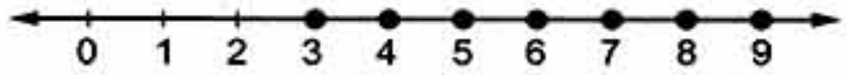


Model 7

1 (a) < (b) 132 (c) odd (d) ∈

2 (a) E (b) 2 (c) flip (d) $15 - x$

3 (a) $x = \{3, 4, 5, 6, 7, 8\}$



(b) The numbers are : $(x + 8)$, $(x + 10)$, $(x + 12)$, $(x + 14)$ and $(x + 16)$

4 (a) The area of the rhombus = $\frac{1}{2} \times 6 \times 8$
= 24 cm^2.

The area of the square = $\frac{1}{2} \times 7 \times 7$
= 24.5 cm^2.

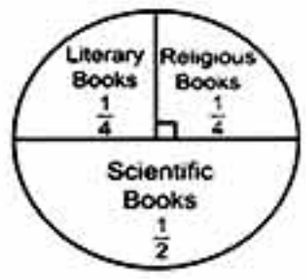
The area of the square is greater.

(b) The length of $\overline{BC}$ = 32 ÷ 4 = 8 cm.

The area of Δ ABE = $\frac{1}{2} \times 3 \times 4$ = 6 cm^2.

The area of the figure AECD = 32 – 6
= 26 cm^2.

5 (a)



The number of religious books = $\frac{1}{4} \times 800$
= 200 books.

The number of literary books = $\frac{1}{4} \times 800$
= 200 books.

The number of scientific books = $\frac{1}{2} \times 800$
= 400 books.

(b) (1) $\overleftrightarrow{EF}$ (2) $\overleftrightarrow{DF}$ (3) $\overleftrightarrow{BF}$ (4) $\overleftrightarrow{BF}$

Model 8

1 (a) ⊂ (b) $x - 3$ (c) 1 (d) flip

2 (a) 3ℓ (b) ∅ (c) 81 (d) 28

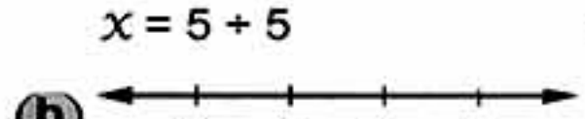
3 (a) The area of the parallelogram = 12 × 5
= 60 cm^2.

The height = 60 ÷ 6 = 10 cm.

(b) The perimeter = $\left(\frac{1}{2} \times 70 \times \frac{22}{7}\right) + 70$
= 110 + 70 = 180 cm.

4 (a) $75 = 5x + 7 \times 10$ $5x + 70 = 75$
$5x = 75 - 70$ $5x = 5$
$x = 5 + 5$ $x = 1$

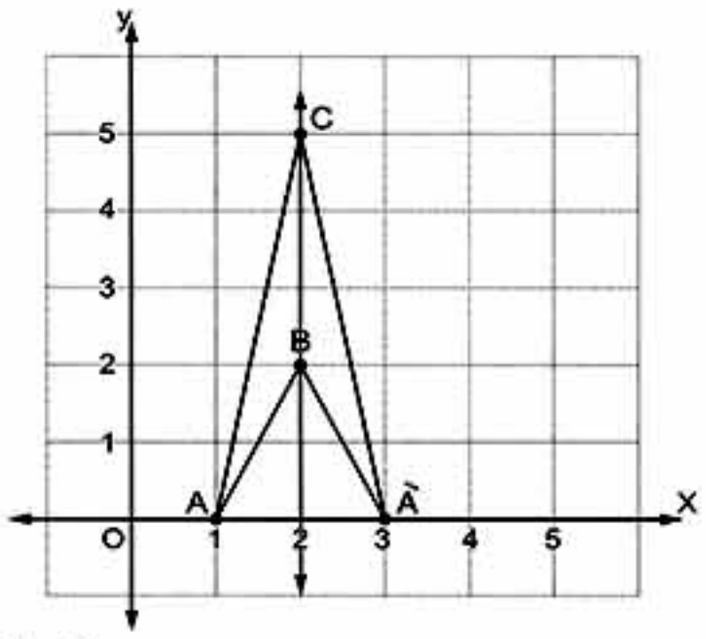
(b)



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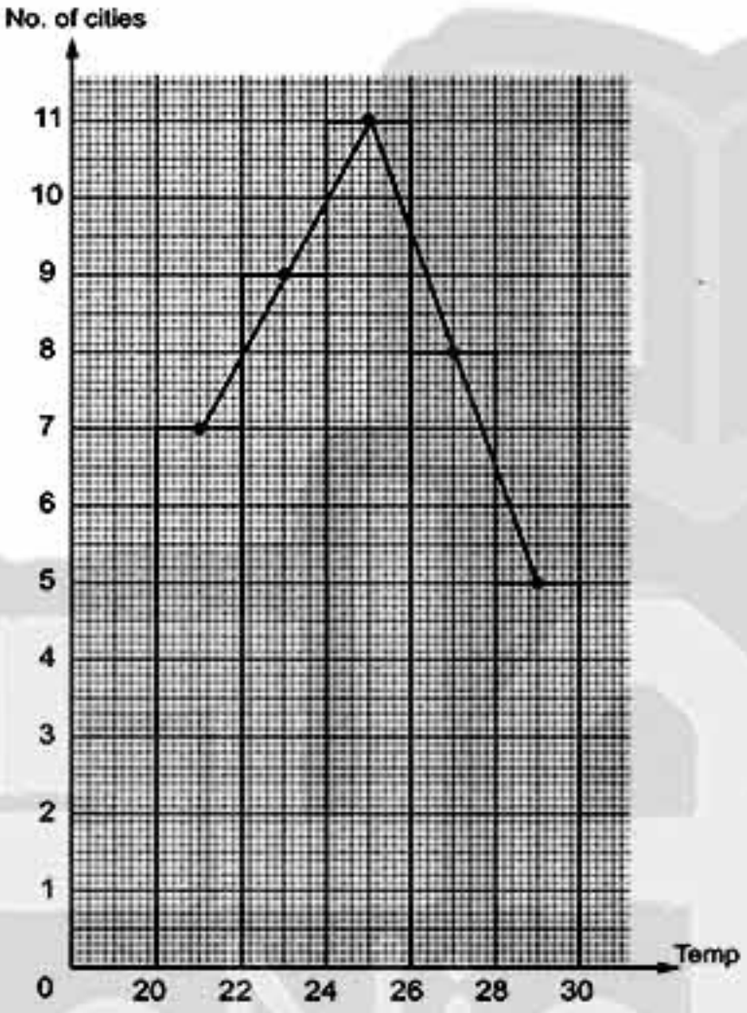
Answers of final examinations

5 (a)



(b) (1) 16

(2)



Model 9

1 (a) 0 (b) 30 (c) $10 - x$ (d) 1

2 (a) 0 (b) 5
(c) additive identity element (d) (4 , 7)

3 (a) $3x - 1 = 8$ $3x = 8 + 1$ $3x = 9$
$x = 9 \div 3$ $x = 3$

(b) (1) $18 \times 99 = 18 \times (100 - 1)$
$= 18 \times 100 - 18 \times 1$
$= 1800 - 18 = 1782$

(2) $56 \times 1002 = 56 \times (1000 + 2)$
$= 56 \times 1000 + 56 \times 2$
$= 56\,000 + 112 = 56\,112$

(3) $4 \times 49 \times 25 = 4 \times 25 \times 49$
$= (4 \times 25) \times 49$
$= 100 \times 49 = 4\,900$

(4) $156 + 871 + 344 + 129$
$= 156 + 344 + 871 + 129$
$= (156 + 344) + (871 + 129)$
$= 500 + 1\,000 = 1\,500$

4 (a) The area of $\Delta ABC = \frac{1}{2} \times 6 \times 8 = 24\ cm^2$.

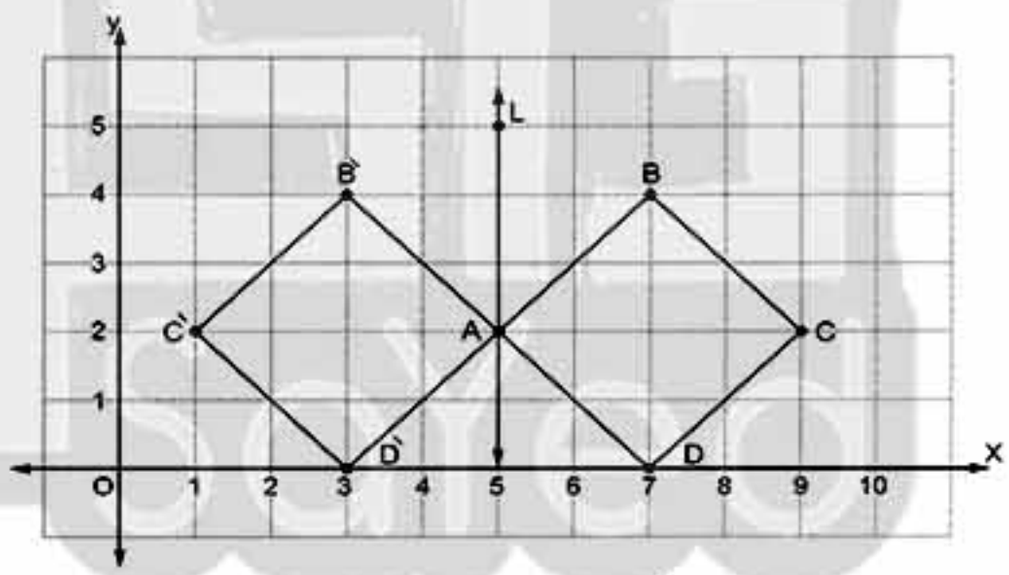
The length of $\overline{AD} = \frac{24}{\frac{1}{2} \times 10} = 4.8$ cm.

(b) The area of the rhombus $= \frac{1}{2} \times 6 \times 8$
$= 24\ cm^2$.

The area of the parallelogram $= 4 \times 8$
$= 32\ cm^2$.

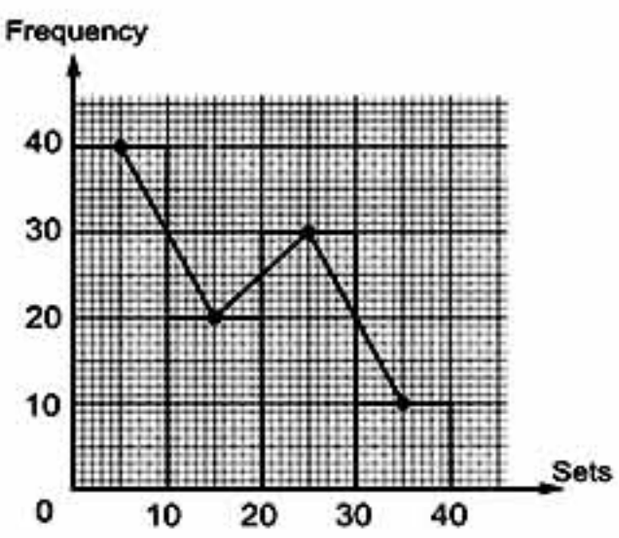
The area of the parallelogram is greater.

5 (a)



(1) A (5 , 2) (2) B̀ (3 , 4)
(3) C̀ (1 , 2) (4) D̀ (3 , 0)

(b)



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Answers of Final examinations

Model 10



1 (a) ⊂ (b) $4x$
(c) 3 (d) reflection

2 (a) $\{1, 2, 3, 4\}$ (b) $2Z - 5$
(c) 20 (d) odd

3 (a) The area of one square $= \frac{1}{2} \times 9 \times 9$
$= 40.5 \text{ cm}^2$.
The area of the left part
$= 312.5 - (7 \times 40.5) = 29 \text{ cm}^2$.

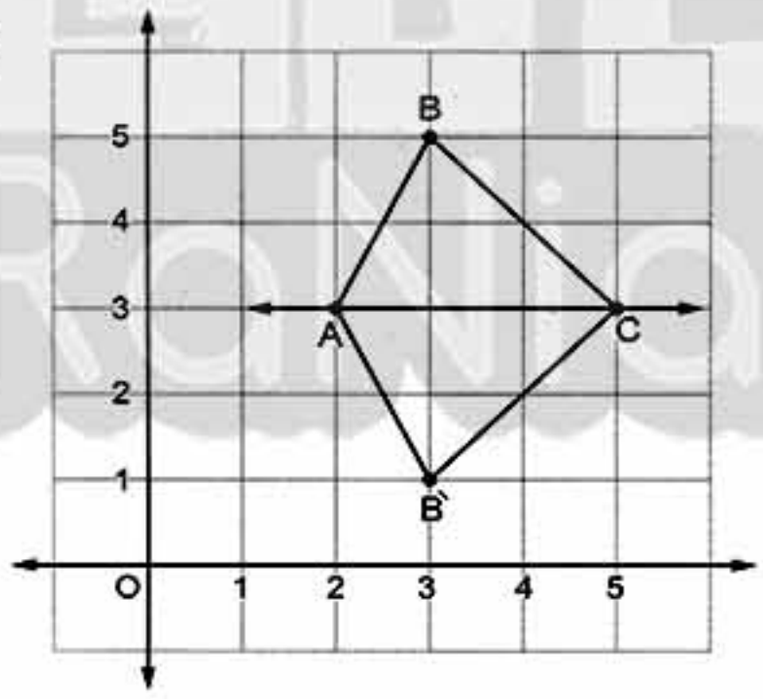
(b) The radius length $= \frac{66}{2 \times \frac{22}{7}} = 10.5$ cm.

4 (a) (1) $25 \times 4 \times 9\,892 = (25 \times 4) \times 9\,892$
$= 100 \times 9\,892 = 989\,200$

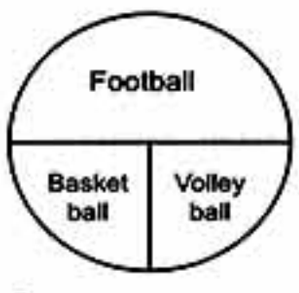
(2) $862 + 138 + 199 + 801$
$= (862 + 138) + (199 + 801)$
$= 1\,000 + 1\,000 = 2\,000$

(b) $2x + 3 = 15$ $2x = 15 - 3$
$2x = 12$ $x = 12 \div 2$
$x = 6$

5 (a)



(b) Football $= \frac{20}{40} = \frac{1}{2}$
Basketball $= \frac{10}{40} = \frac{1}{4}$
Volleyball $= \frac{10}{40} = \frac{1}{4}$



Model 11

1 (a) ∉ (b) 0
(c) translation (d) $2\pi r$

2 (a) 3 (b) 3 , 6 , 12 , 24 , 48 , 96
(c) $2(x + y)$ (d) (2 , 5)

3 (a) $x + 13$, $x + 11$, $x + 9$, $x + 7$ and $x + 5$

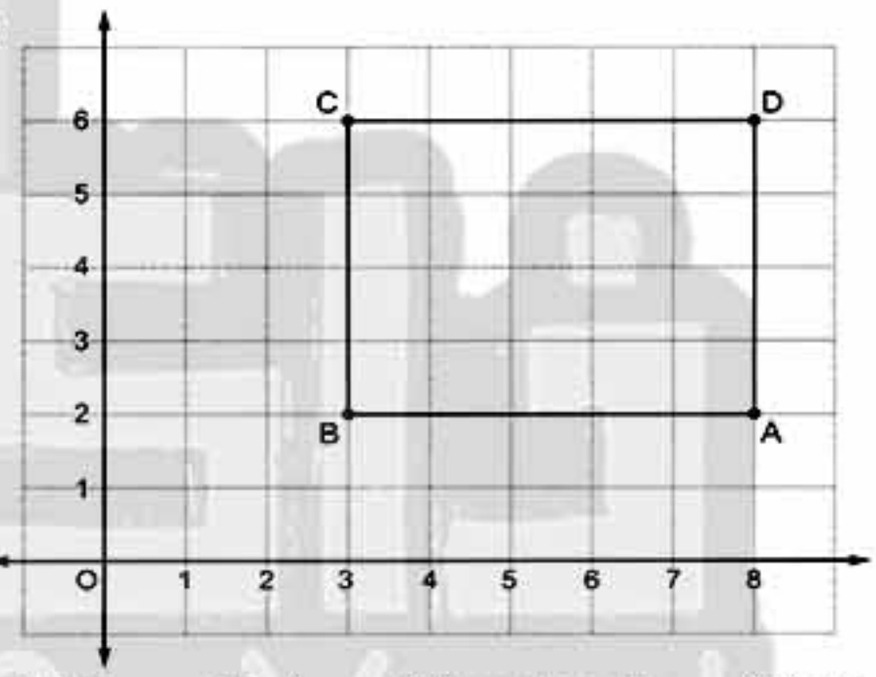
(b) The area of the parallelogram ABCD
$= 10 \times 12 = 120 \text{ cm}^2$.
The length of $\overline{BC} = \frac{120}{8} = 15$ cm.

4 (a) (1) $3x + 5 = 263$ $x = 26 - 5$
$3x = 21$ $x = 21 \div 3$ $x = 7$

(2) $\frac{1}{5}x - 2 = 10$ $\frac{1}{5}x = 10 + 2$
$\frac{1}{5}x = 12$ $x = 12 \div \frac{1}{5}$ $x = 60$

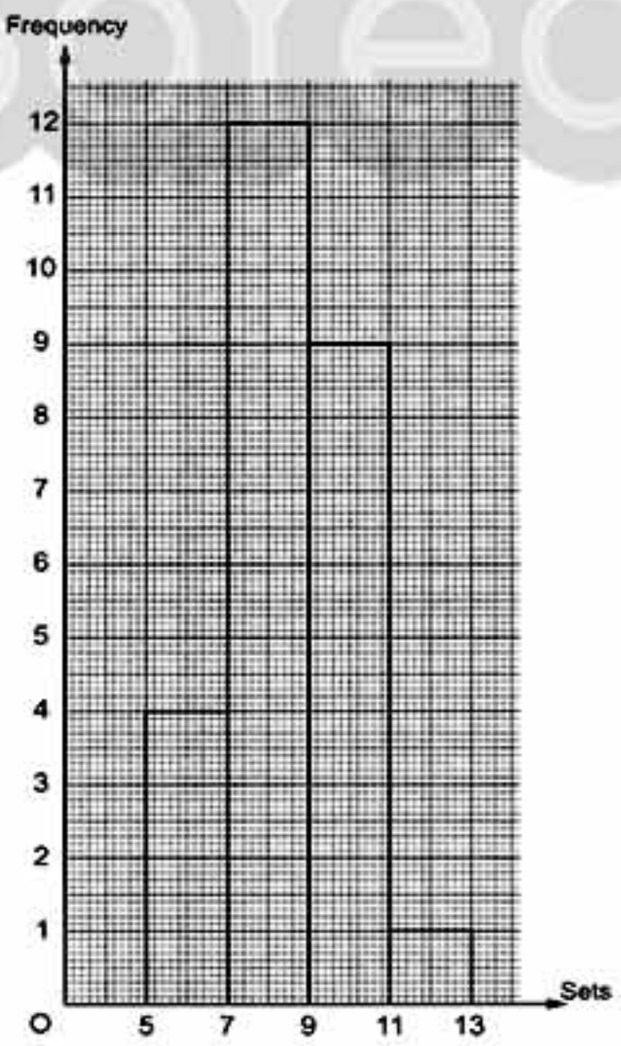
(b) The height $= \frac{6}{\frac{1}{2} \times 3} = 4$ cm.

5 (a)



(1) 5 (2) 4 (3) rectangle (4) 18

(b)



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Answers of final examinations

Model 12

1 (a) odd (b) 4 (c) 20 (d) <

2 (a) 1 (b) $10 - x$ (c) 7 (d) $\{2\}$

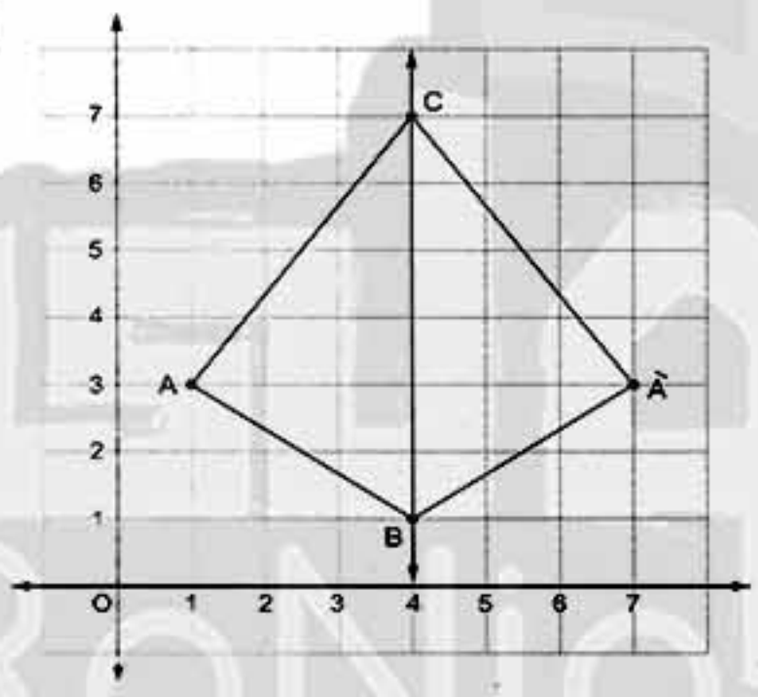
3 (a) The circumference of the semicircle
$= \frac{1}{2} \times 70 \times \frac{22}{7} = 110$ cm.
The perimeter of the window
$= 110 + 70 + 70 + 70 = 320$ cm.

(b) The area of the square $= 70 \times 70$
$= 4\,900$ cm^2.
The area of the semicircle
$= 6825 - 4\,900 = 1\,925$ cm^2.

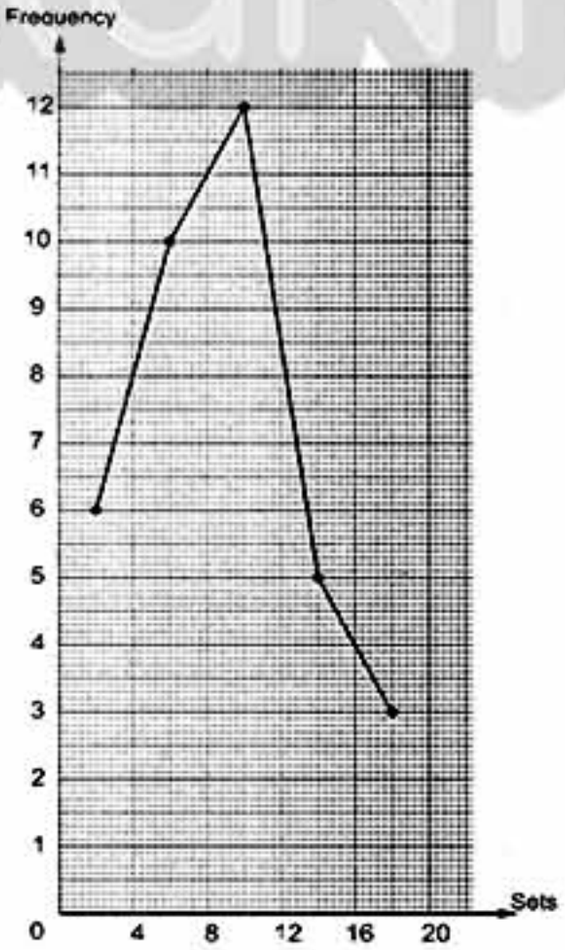
4 (a) $38 + 47 + 62 + 53 = 38 + 62 + 47 + 53$
$= (38 + 62) + (47 + 53) = 100 + 100 = 200$

(b) $x + 45 = 75 \quad x = 75 - 45 \quad x = 30$

5 (a)



(b)



Model 13

1 (a) $\not\subset$ (b) $2x - 7$ (c) 0 (d) 15

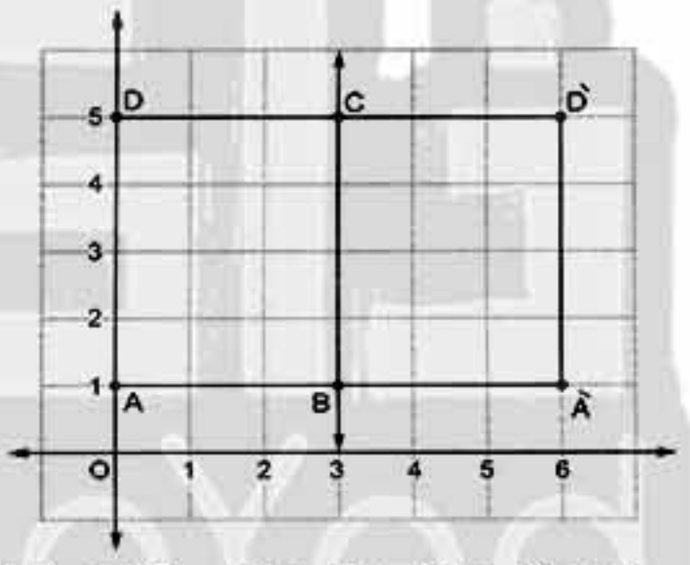
2 (a) 81 , 243 (b) $35 - x$
(c) 96 (d) translation

3 (a) The perimeter $= \left(3.5 \times \frac{22}{7}\right) + 7 + 7 = 25$ cm.
(b) The area $= 8 \times 5 = 40$ cm^2.

4 (a) (1) $519 \times 99 = 519 \times (100 - 1)$
$= 519 \times 100 - 519 \times 1$
$= 51900 - 519 = 51381$
(2) $316 \times 1001 = 316 \times (1000 + 1)$
$= 316 \times 1000 + 316 \times 1$
$= 316000 + 316 = 316316$

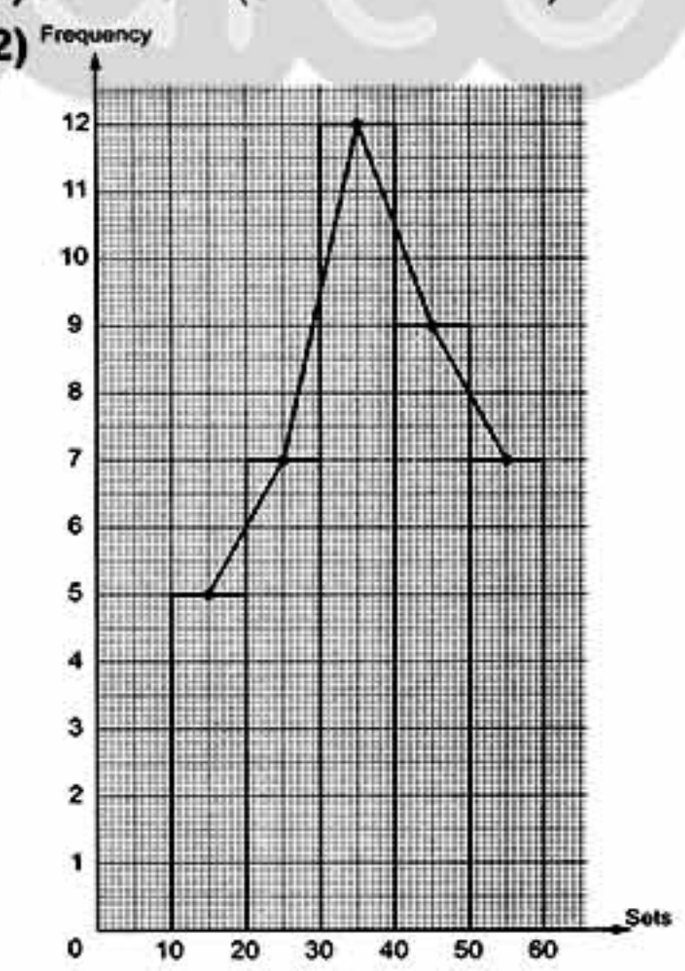
(b) (1) $\frac{1}{5}x - 1 = 10 \quad \frac{1}{5}x = 10 + 1$
$\frac{1}{5}x = 11 \quad x = 11 \div \frac{1}{5} \quad x = 55$
(2) $5x + 1 = 16 \quad 5x = 16 - 1$
$5x = 15 \quad x = 15 \div 5 \quad x = 3$

5 (a)



(b) (1) A = 40 – (5 + 7 + 12 + 7) = 9

(2)



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Answers of Final examinations

Model 14



1 (a) {0} (b) y + 5 (c) 0 (d) ∈

2 (a) 6 , 2 (b) 6 (c) π (d) 5

3 (a) **(1)** 612 + 154 + 88 + 846

= 612 + 88 + 154 + 846

(commutative property)

= (612 + 88) + (154 + 846)

(Associative property)

= 700 + 1 000 = 1 700

(2) 125 × 19 × 8 = 125 ×8 × 19

(Commutative property)

= (125 × 8) × 19 (Associative property)

= 1 000 × 19 = 19 000

(b) $2x - 4 = 8$ $2x = 8 + 4$

$2x = 12$ $x = 12 \div 2$ $x = 6$

4 (a) The area of the triangle ABE = $\frac{1}{2} \times 4 \times 4$

$= 8\ cm^2$.

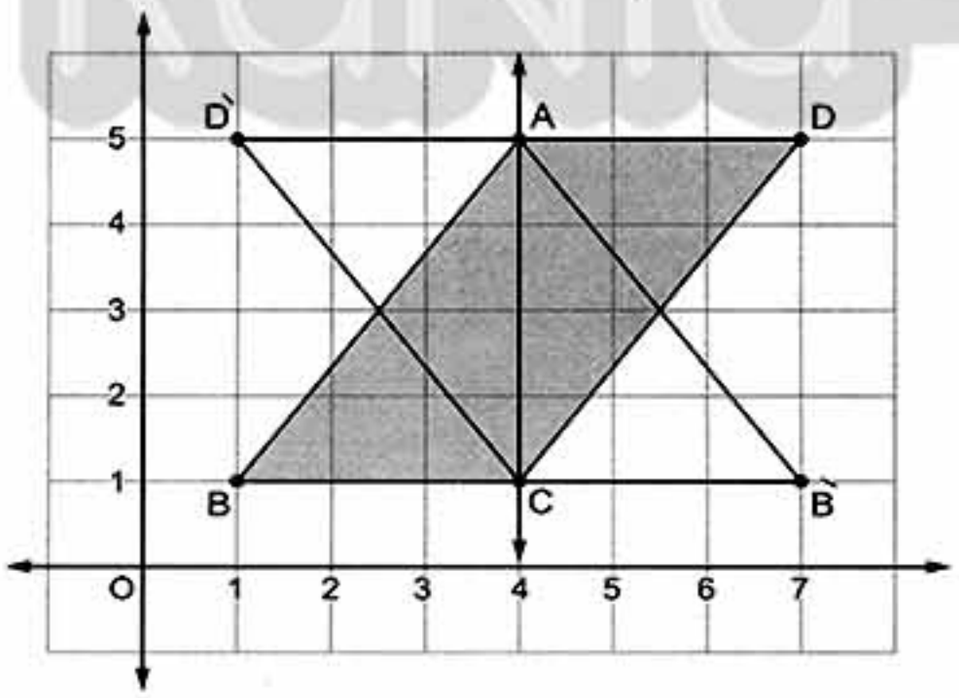
The area of the shaded part = 32 – 8

$= 24\ cm^2$.

(b) The perimeter = $\left(35 \times \frac{22}{7}\right) + 70 + 70$

= 250 cm.

5 (a)



(1) Parallelogram

The area = 3 × 4 = 12 square units.

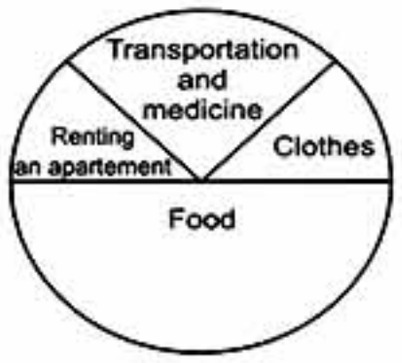
(2) Drawn in the figure.

(b) Clothes = $\frac{200}{1\,600} = \frac{1}{8}$

Food = $\frac{800}{1\,600} = \frac{1}{2}$

Transportation and medicine = $\frac{400}{1\,600} = \frac{1}{4}$

Renting on apartement = $\frac{200}{1\,600} = \frac{1}{8}$



Model 15



1 (a) ℕ (b) 11 (c) 0 (d) <

2 (a) 0 , 1 (b) 3 y + 2 (c) (5 , 8) (d) 7

3 (a) Dina has x pounds and her father gave her 5 pounds , then the total what she has is 12 pounds.

$x + 5 = 12$ $x = 12 - 5$ $x = 7$

(b) 99 × 15 = (100 – 1) × 15 = 15 × 100 – 15 × 1

= 1 500 – 15 = 1 485

4 (a) The area of the garden = $\frac{1}{2} \times 8 \times 7$

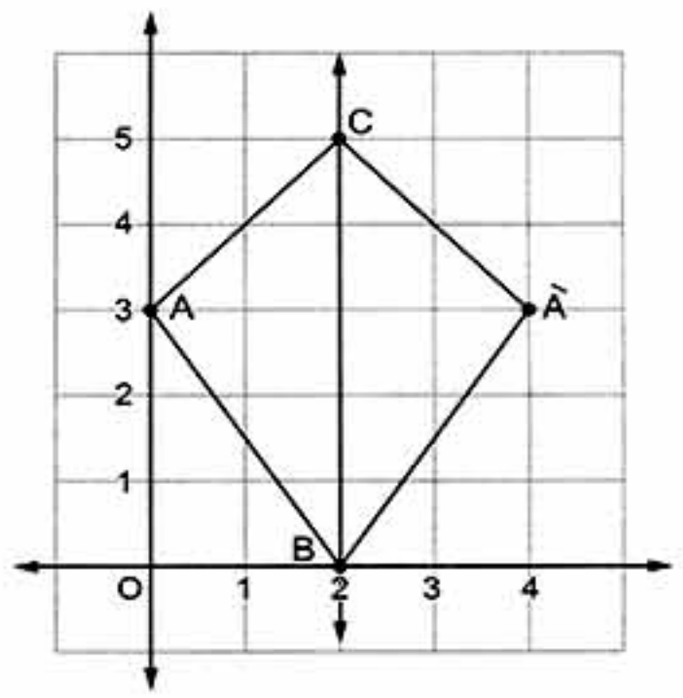
$= 28\ m^2$.

The area of the land = 5 × 10 = 50 m^2.

The area of the land is greater.

(b) The diameter length = 88 ÷ $\frac{22}{7}$ = 28 cm.

5 (a)

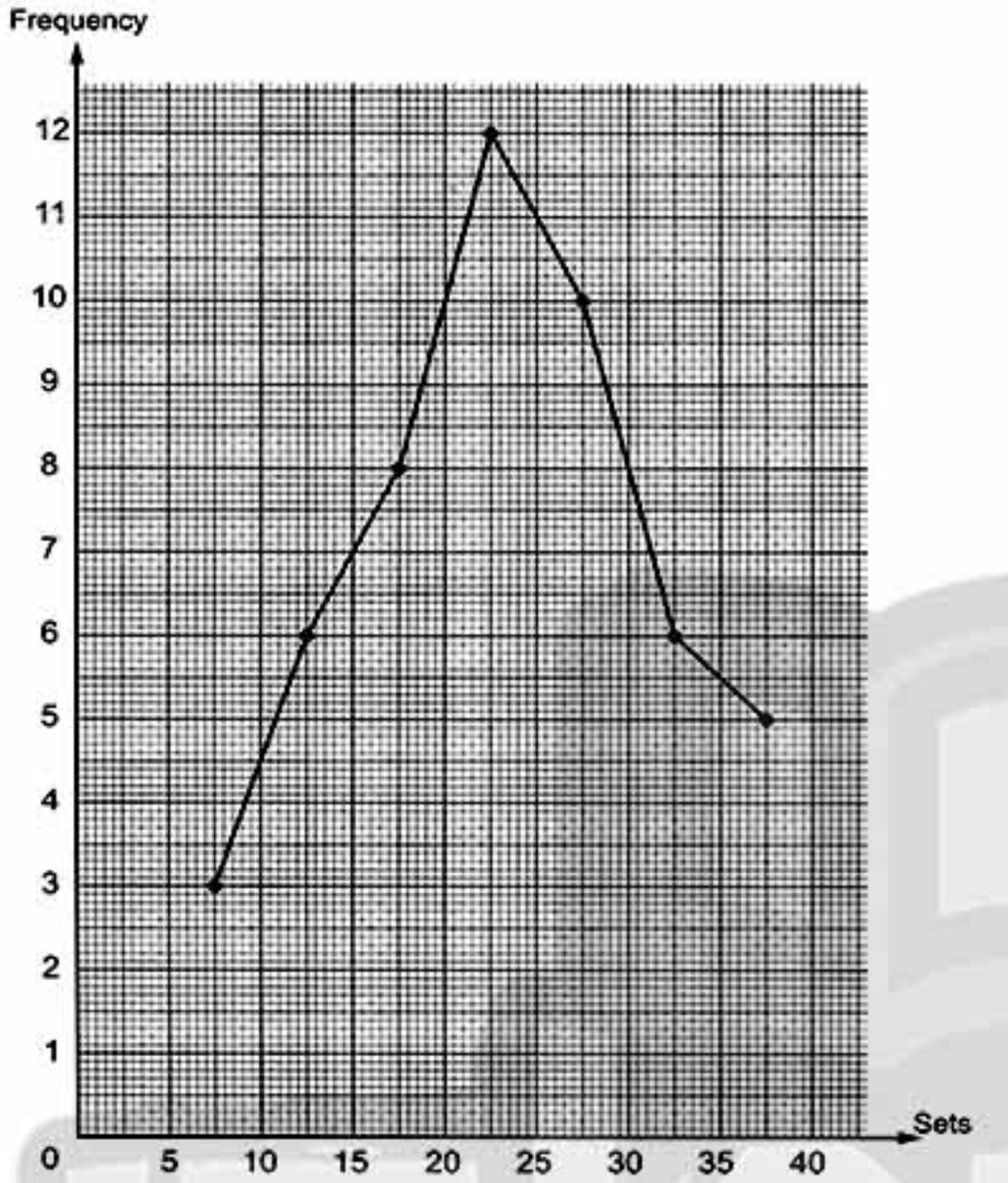


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Answers of final examinations

(b) (1) 11 students.

(2)



Model 16

1 (a) < (b) $x + 5$ (c) 2 (d) $\subset$

2 (a) $\{1 , 2 , 3 , 4\}$ (b) 5
(c) 96 (d) translation

3 (a) The length of $\overline{BC} = 6.5 - 2 = 4.5$ cm.

The area of the triangle ABC $= \frac{1}{2} \times 4.5 \times 3.2$
$= 7.2$ cm^2.

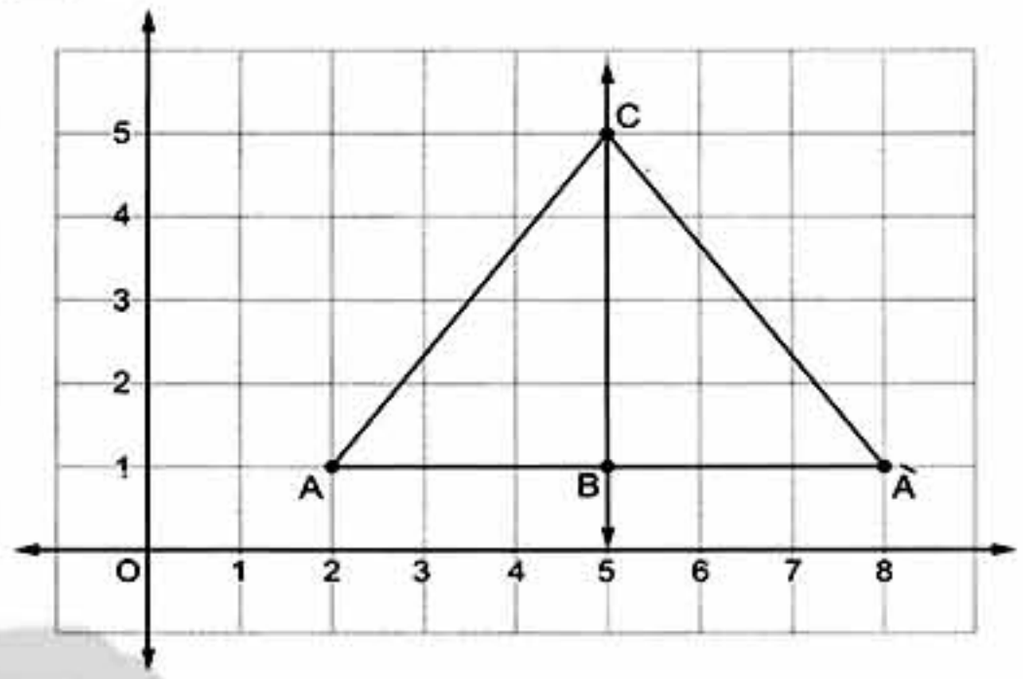
(b) The area of the rhombus $= \frac{1}{2} \times 7 \times 9$
$= 31.5$ cm^2.

The side length of the rhombus $= 31.5 \div 5$
$= 6.3$ cm.

4 (a) $48 + 637 + 52 + 363 = 48 + 52 + 637 + 363$
$= (48 + 52) + (637 + 363)$
$= 100 + 1\,000 = 1\,100$

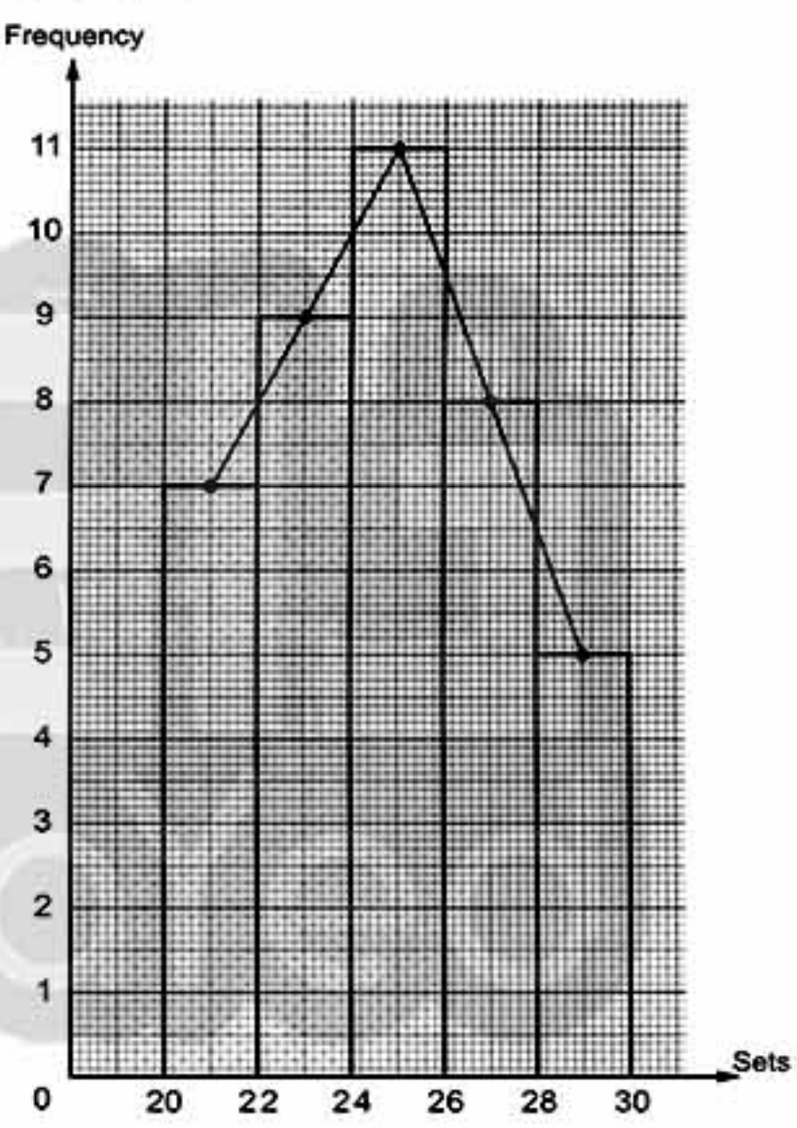
(b) $\frac{1}{3} x - 1 = 3$ $\frac{1}{3} x = 3 + 1$
$\frac{1}{3} x = 4$ $x = 4 \div \frac{1}{3}$ $x = 12$

5 (a)



(b) (1) 16 cities.

(2) Frequency

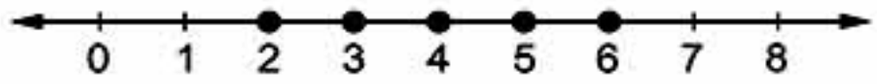


Model 17

1 (a) even (b) zero (c) $2x - 3$ (d) 25

2 (a) 9 (b) 4 , 3
(c) 40 (d) $(x + y) \times 2$

3 (a) $x = \{2 , 3 , 4 , 5 , 6\}$



(b) $2x + 5 = 17$ $2x = 17 - 5$
$2x = 12$ $x = 12 \div 2$ $x = 6$

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4 (a) The perimeter = $2 \times 7 \times \frac{22}{7}$ = 44 cm.

(b) The area of the parallelogram = 34.75 × 28.17
= 978.9075 ≃ 978.91 cm^2.

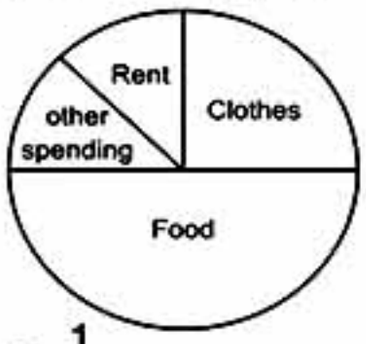
5 (a) (1) $\overleftrightarrow{EF}$ (2) $\overleftrightarrow{DF}$ (3) $\overleftrightarrow{BF}$ (4) $\overleftrightarrow{BF}$

(b) Food = $\frac{1\,000}{2\,000} = \frac{1}{2}$

Clothes = $\frac{500}{2\,000} = \frac{1}{4}$

Rent = $\frac{250}{2\,000} = \frac{1}{8}$

Other spending = $\frac{250}{2\,000} = \frac{1}{8}$



Model 18

1 (a) ∈ (b) 9 (c) 3 (d) O

2 (a) 10 (b) 34 (c) 4 (d) 48

3 (a) The corresponding height to the base $\overline{AE}$ in the triangle ABE = $\frac{60 \times 2}{12}$ = 10 cm.
The area of the parallelogram ABCD
= 10 × 24 = 240 cm^2.

(b) The length of $\overline{AB}$ = 240 ÷ 15 = 16 cm.

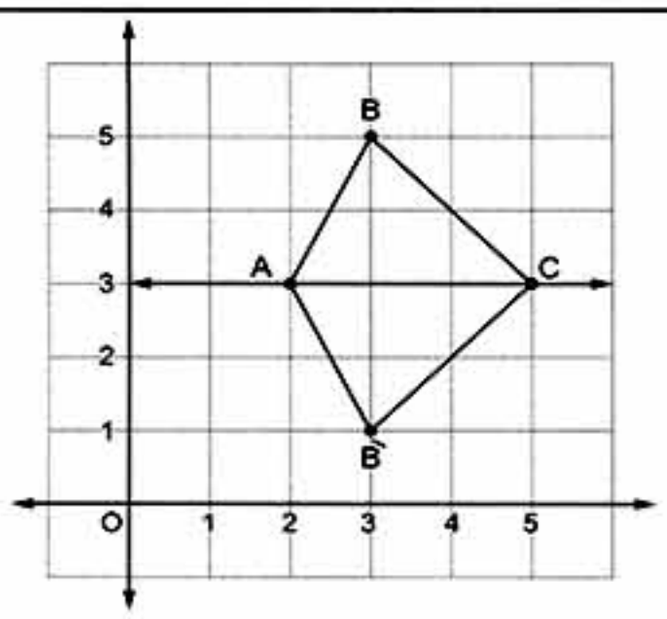
(c) The perimeter of the parallelogram ABCD = (16 + 24) × 2 = 80 cm.

4 (a) (1) (64 + 135 + 36 + 65) × 17
= (64 + 36 + 135 + 65) × 17
= ((64 + 36) + (135 + 65)) × 17
= (100 + 200) × 17 = 300 × 17 = 5 100

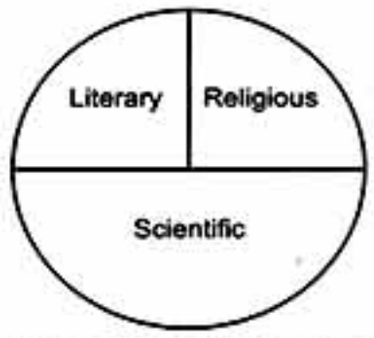
(2) 84 (25 × 4 + 125 × 8) = 84 (100 + 1 000)
= 84 × 1 100
= 92 400

(b) 3 x + 8 = 29 3 x = 29 – 8
3 x = 21 x = 21 ÷ 3 x = 7

5 (a)



(b)



The number of religious books
= $\frac{1}{4}$ × 800 = 200 books.
The number of literary books = $\frac{1}{4}$ × 800
= 200 books.
The number of scientific books
= $\frac{1}{2}$ × 800 = 400 books.

Model 19

1 (a) ⊂ (b) 36
(c) P ÷ 4 (d) reflection

2 (a) 0 (b) odd (c) 2 , 8 (d) 6

3 (a) The area of the rhombus
= $\frac{1}{2}$ × 12 × 16 = 96 cm^2.
The side length of the rhombus
= $\frac{96}{9.6}$ = 10 cm.

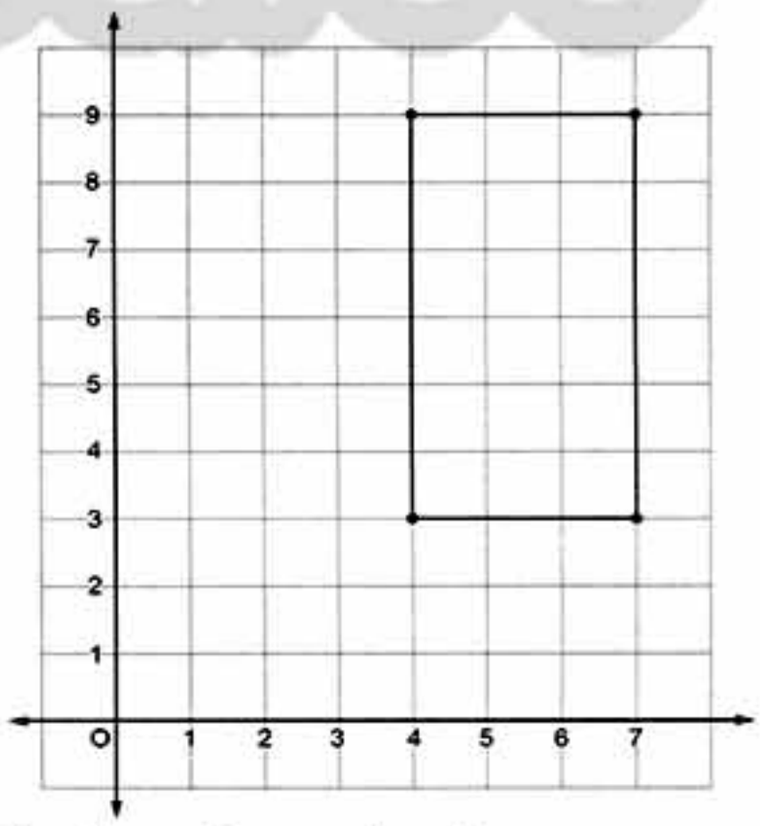
(b) (1) 25 × 38 × 4 = 25 × 4 × 38
= (25 × 4) × 38
= 100 × 38 = 3 800

(2) 44 + 66 + 56 + 34 = 44 + 56 + 66 + 34
= (44 + 56) + (66 + 34) = 100 + 100 = 200

4 (a) 14 – 3 x = 8

(b) The perimeter = $\left(35 \times \frac{22}{7}\right) + 70$ = 180 cm.

5 (a)

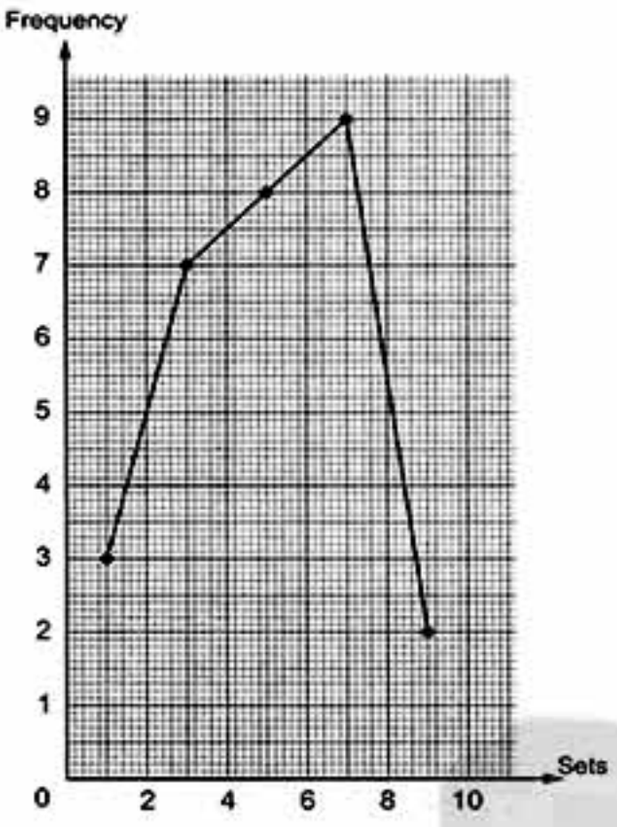


The figure is a rectangle.

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Answers of final examinations

(b)



Model 20

1 (a) 4 (b) 2 (c) $7x - 3$ (d) 25

2 (a) 20 (b) {2 , 3 , 4 , 5 , 6}
(c) 0 (d) reflection

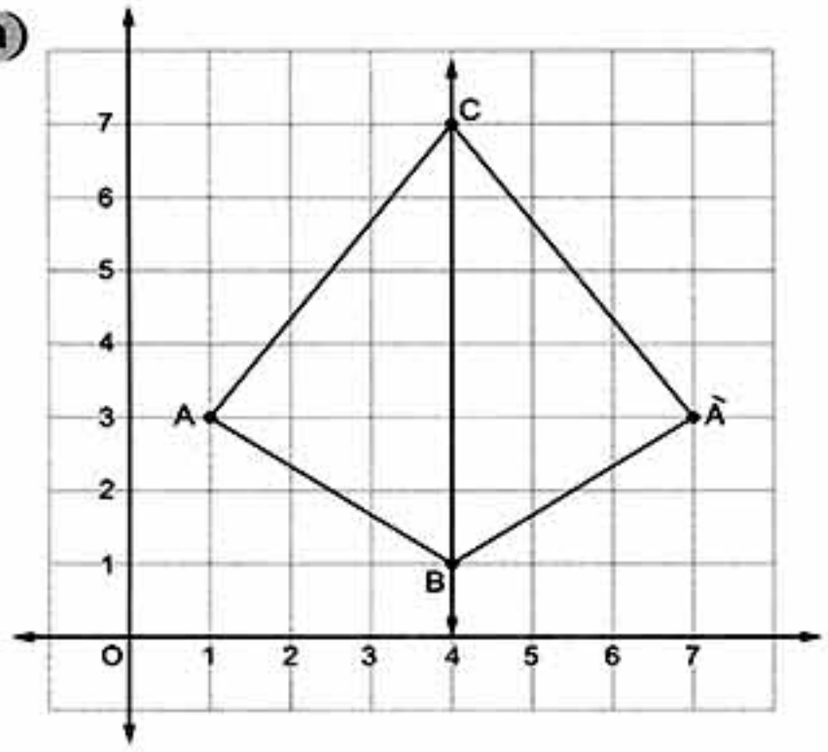
3 (a) $38 + 47 + 62 + 53 = 38 + 62 + 47 + 53$
$= (38 + 62) + (47 + 53) = 100 + 100 = 200$

(b) The area of the triangle $= \frac{1}{2} \times 18 \times 12$
$= 108\ cm^2$.
The area of the rhombus $= \frac{1}{2} \times 24 \times 8$
$= 96\ cm^2$.
The area of the triangle is greater.

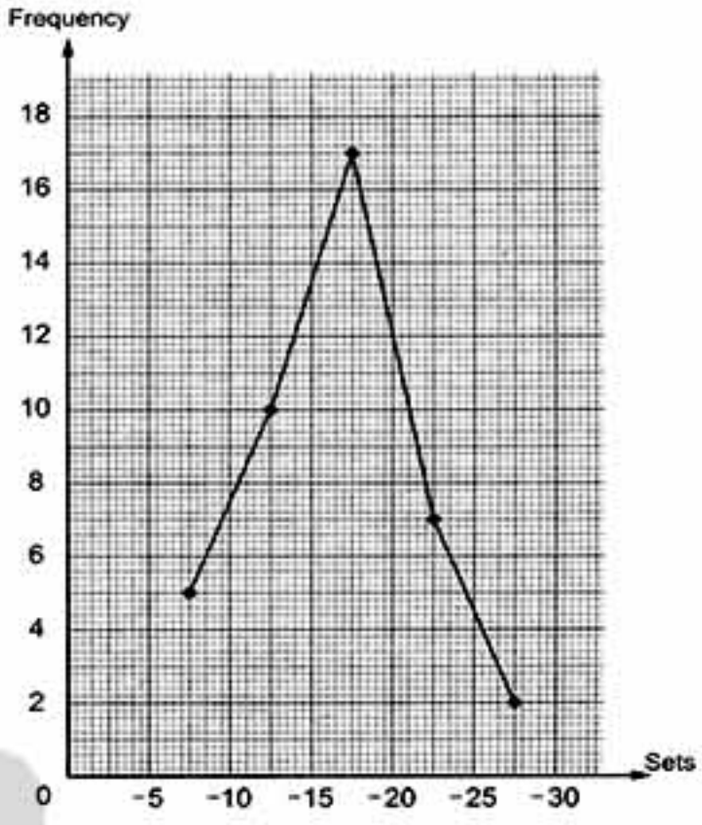
4 (a) The radius length $= \frac{88}{2 \times \frac{22}{7}} = 14$ cm.

(b) $3x + 5 = 26$ $3x = 26 - 5$
$3x = 21$ $x = 21 \div 3$ $x = 7$

5 (a)



(b)



Model 21

1 (a) $\not\subset$ (b) O (c) 2 (d) 10

2 (a) $2x + 3$ (b) 4 , 6 (c) 24 (d) (4 , 7)

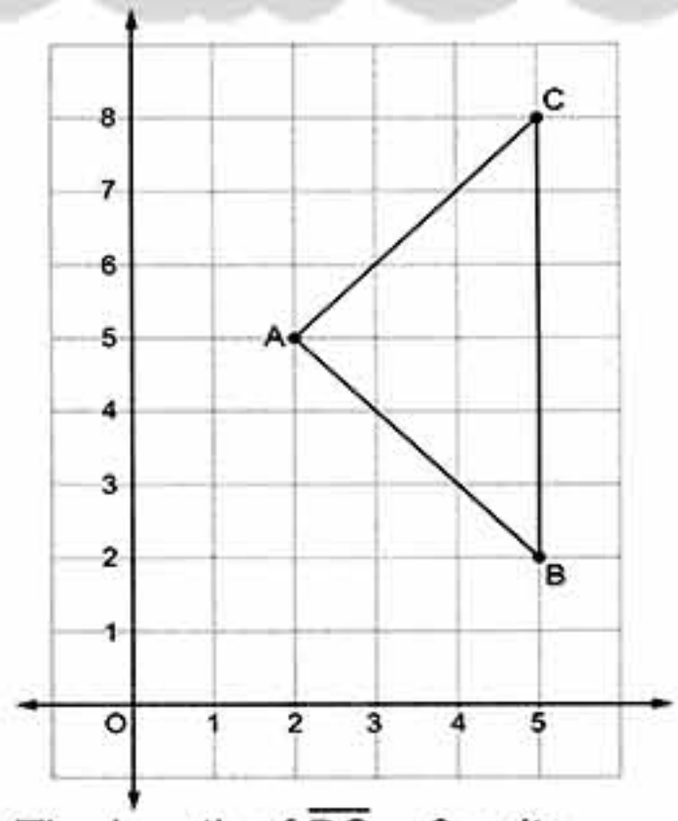
3 (a) The distance areound the figure
$= \left(14 \times \frac{22}{7}\right) + 28 + 28 = 100$ m.

(b) $25 \times 781 \times 4 = 25 \times 4 \times 781$
$= (25 \times 4) \times 781$
$= 100 \times 781 = 78\ 100$

4 (a) (1) $k - 72 = 72$ $k = 72 + 72$ $k = 144$
(2) $6n = 48$ $n = 48 \div 6$ $n = 8$

(b) (1) The area of the parallelogram ABCD
$= 12 \times 10 = 120\ cm^2$.
(2) The length of $\overline{BC} = 120 \div 8 = 15$ cm.

5 (a)



The length of $\overline{BC}$ = 6 units.

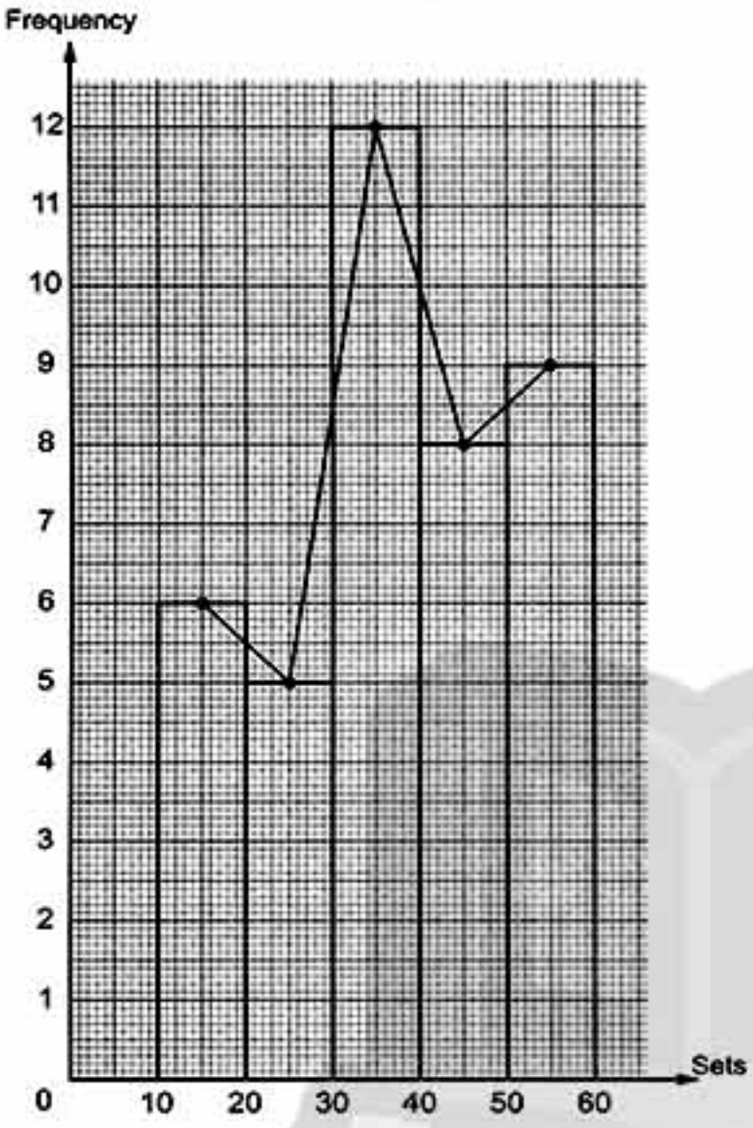
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Answers of Final examinations

(b) (1) The value of A = 40 – (9 + 12 + 5 + 6) = 8

(2)



Model 22



1 **(a)** ∈ **(b)** even **(c)** 2 y – 4 **(d)** translation

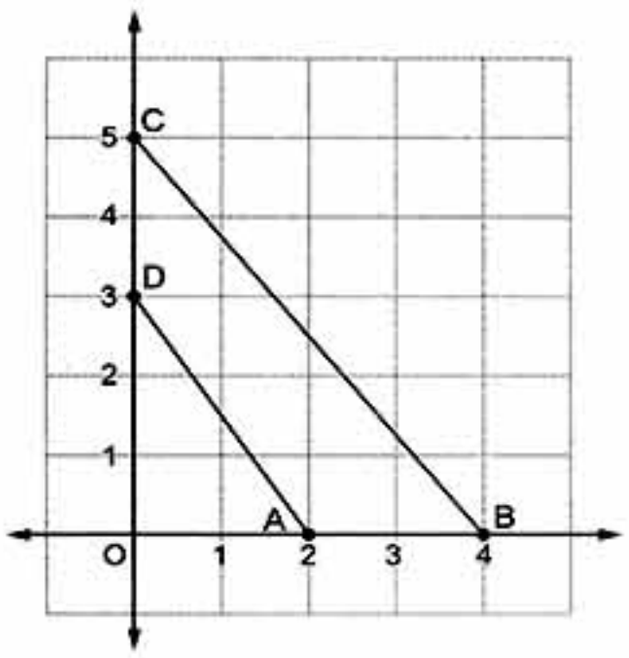
2 **(a)** 2 **(b)** odd **(c)** 66 **(d)** 3 ℓ

3 **(a)** **(1)** 8 × 731 × 125 = 8 × 125 × 731
= (8 × 125) × 731
= 1 000 × 731 = 731 000

(2) 28 + 59 + 72 = 28 + 72 + 59
= (28 + 72) + 59
= 100 + 59 = 159

(b) **(1)** $x + 9$ **(2)** $x - 8$

4



The area of the triangle OBC = $\frac{1}{2}$ × 4 × 5
= 10 square units.

The area of the triangle OAD = $\frac{1}{2}$ × 2 × 3
= 3 square units.

The area of the figure ABCD = 10 – 3
= 7 square units.

5 **(a)** 72 = $\frac{1}{2}$ × d × d

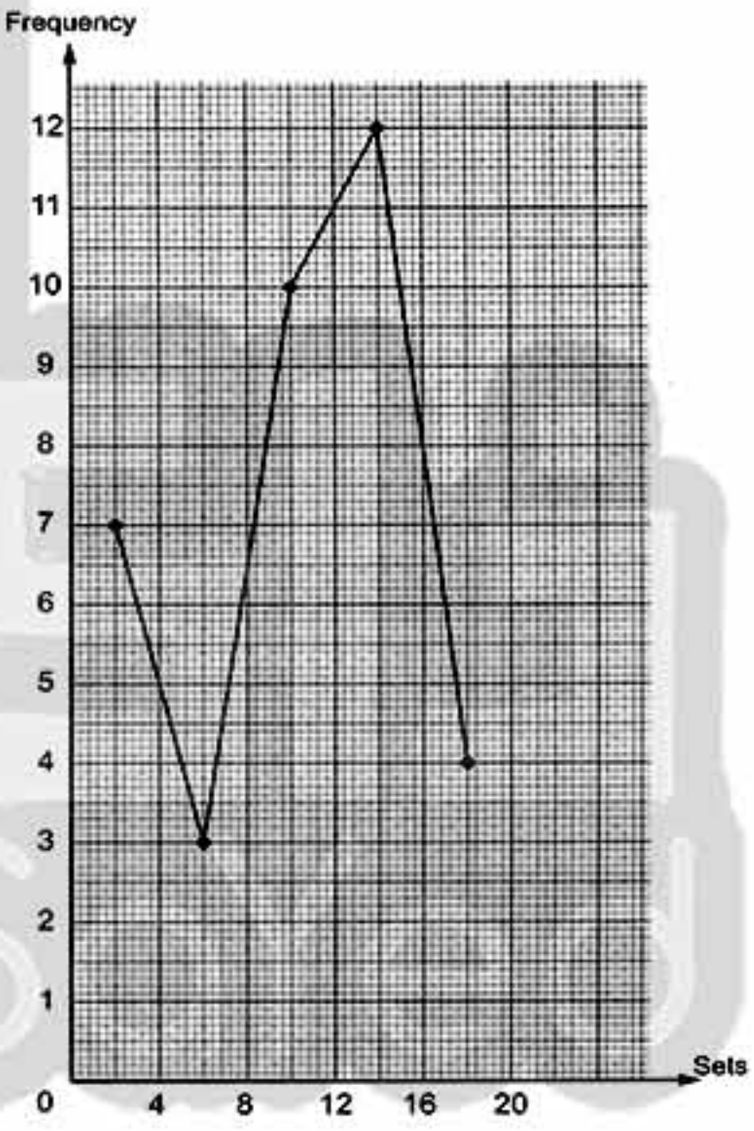
144 = d × d

12 × 12 = d × d

d = 12

The length of the diagonal = 12 cm.

(b)



Model 23



1 **(a)** ⊂ **(b)** even **(c)** 2 **(d)** {2 , 3}

2 **(a)** 1 **(b)** 20 – x **(c)** 4
(d) the product of the lengths of its two diagonals

3 **(a)** The area of the triangle = $\frac{1}{2}$ × 12 × 8
= 48 cm^2.

The area of the parallelogram = 5 × 10
= 50 cm^2.

The area of the parallelogram is greater.

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(b) (1) $x + 3 = 17$ $x = 17 - 3$ $x = 14$

(2) $2x + 7 = 23$ $2x = 23 - 7$

$2x = 16$ $x = 16 \div 2$ $x = 8$

4 (a) (1) $156 + 871 + 344 + 129$

$= 156 + 344 + 871 + 129$

$= (156 + 344) + (871 + 129)$

$= 500 + 1\,000 = 1\,500$

(2) $27\,(25 \times 4 + 125 \times 8)$

$= 27\,(100 + 1\,000)$

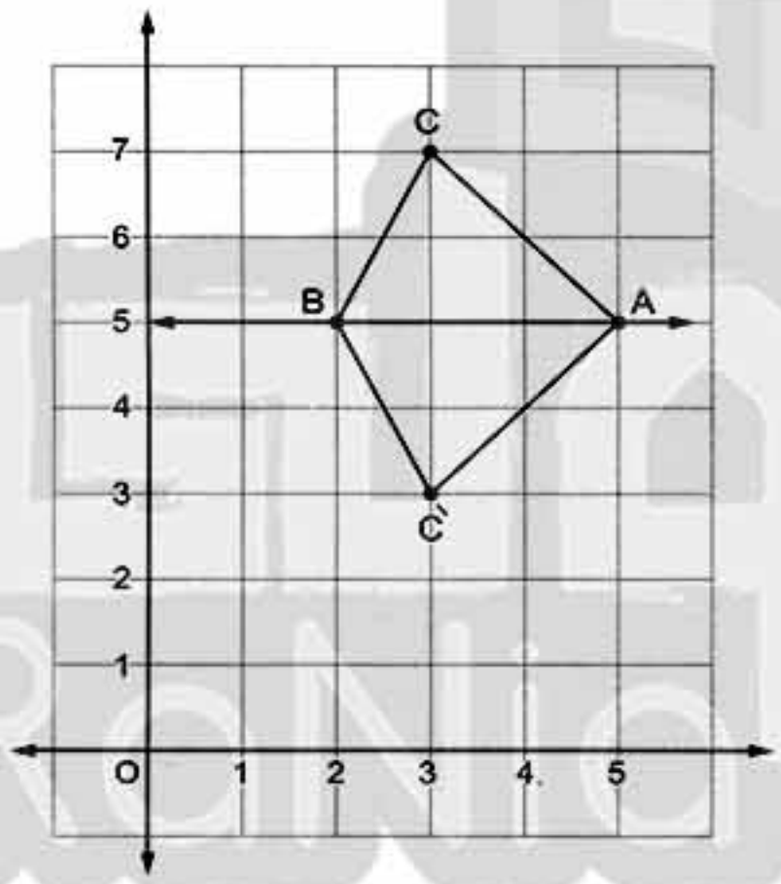
$= 27 \times 100 + 27 \times 1\,000$

$= 2\,700 + 27\,000 = 29\,700$

(b) The circumference of the base $= 7 \times \frac{22}{7}$

$= 22$ cm.

5 (a)



(b) The number of female candidates

$= \frac{3}{4} \times 220 = 165$

Model 24

1 (a) < **(b)** reflection **(c)** 0 **(d)** 8

2 (a) 9 **(b)** $2z - 8$ **(c)** π **(d)** 13 , 21

3 (a) The area of the parallelogram ABCD

$= 18 \times 10 = 180$ cm^2.

The length of $\overline{DE} = \frac{180}{12} = 15$ cm.

(b) The distance $= \left(7 \times \frac{22}{7}\right) + 14 = 36$ cm.

4 (a) (1) $38 + 47 + 82 + 53 = 38 + 62 + 47 + 53$

$= (38 + 62) + (47 + 53)$

$= 100 + 100 = 200$

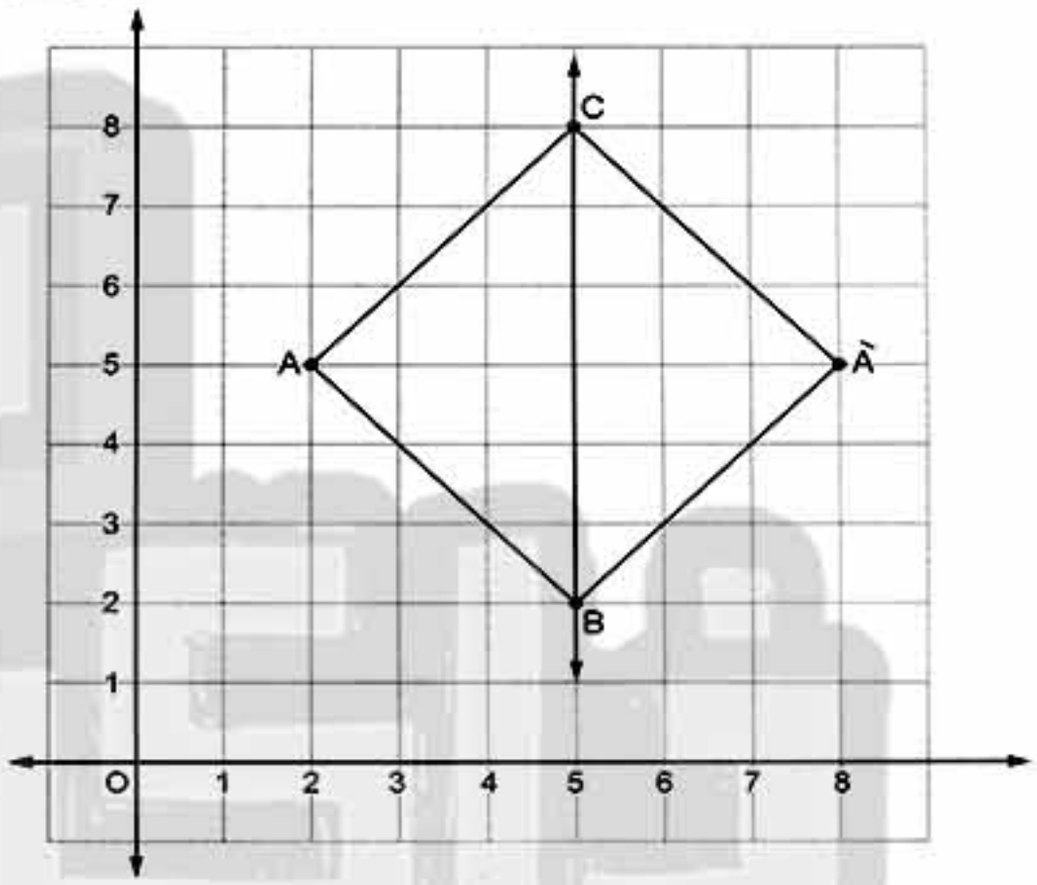
(2) $8 \times 37 \times 125 = 8 \times 125 \times 37$

$= (8 \times 125) \times 37$

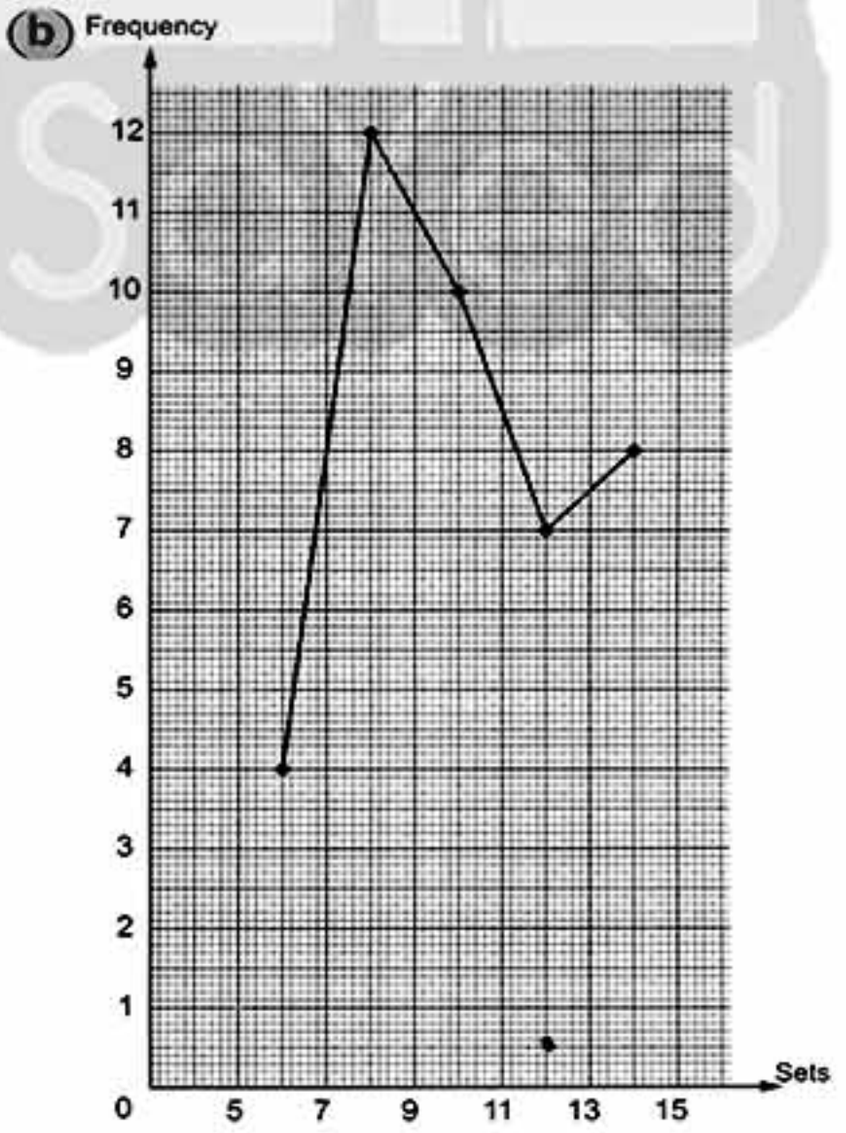
$= 1\,000 \times 37 = 37\,000$

(b) (1) $x + 17 = 28$ **(2)** $y - 9 = 23$

5 (a)



(b)



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Model 25

1 (a) ⊂ (b) 1 (c) ∈ (d) 1

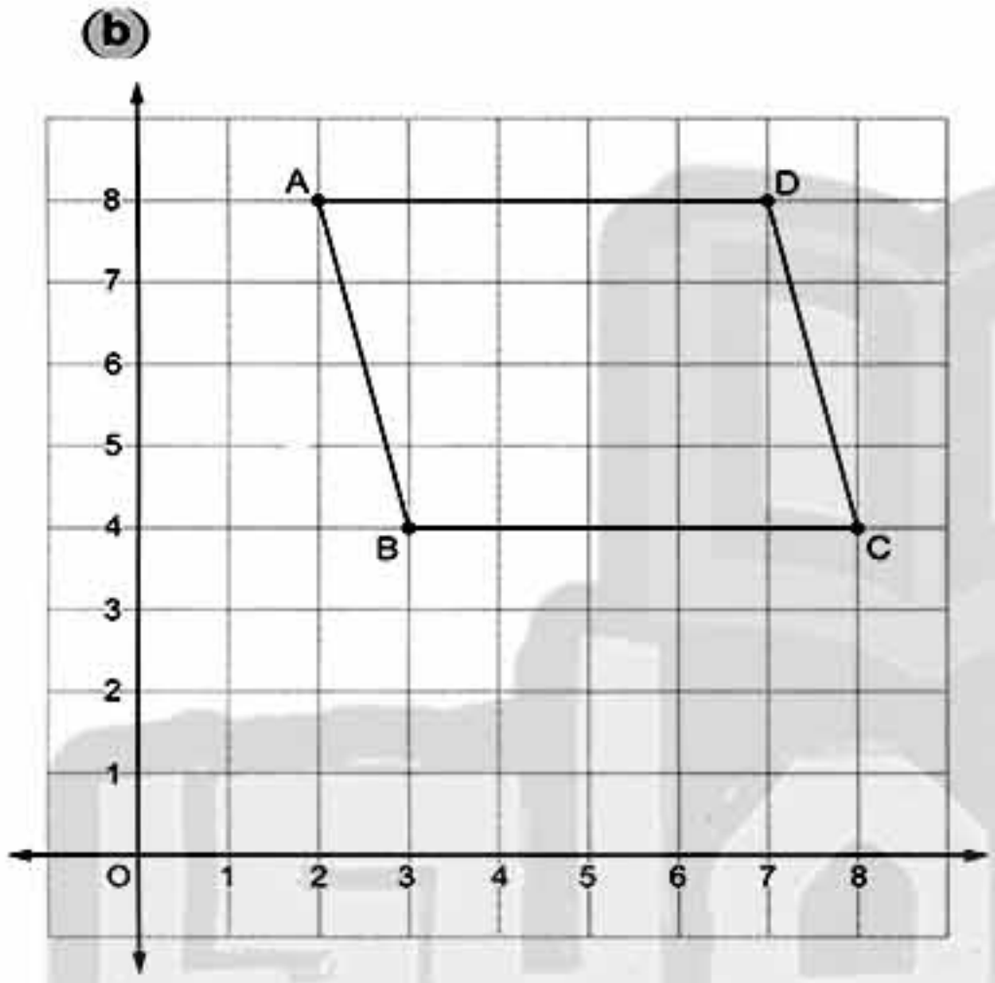
2 (a) (3 , 5) (b) 7 (c) $2x - 8$ (d) 8

3 (a) $4 \times 72 \times 25 = 4 \times 25 \times 72$

$= (4 \times 25) \times 72$

$= 100 \times 72 = 7\,200$

(b)



Parallelogram.

4 The distance = $\left(7 \times \frac{22}{7}\right) + 21 + 21 = 64$ m.

5 (a) $\frac{1}{3}x - 2 = 8$ $\frac{1}{3}x = 8 + 2$

$\frac{1}{3}x = 10$ $x = 10 \div \frac{1}{3}$ $x = 30$

(b) Football = $\frac{20}{40} = \frac{1}{2}$

Basketball = $\frac{10}{40} = \frac{1}{4}$

volleyball = $\frac{10}{40} = \frac{1}{4}$



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